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METHOW WILDLIFE AREA MANAGEMENT PLAN
Washington Department of Fish and Wildlife



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2006

Table of Contents

EXECUTIVE SUMMARY.....	1
CHAPTER I. INTRODUCTION.....	3
1.1 Agency Mission statement.....	3
1.2 Agency Goals and Objectives.....	3
1.3 Agency Policies	3
1.4 Methow Wildlife Area Goals.....	3
1.5 Planning Process	4
CHAPTER II. AREA DESCRIPTION AND MAPS.....	6
2.1 Property Size & Location.....	6
2.2 Purchase History And Purpose.....	20
2.3 Ownership & Use Of Adjacent Lands	23
2.4 Funding	24
2.5 Managerial History	24
2.6 Climate	25
2.7 Soils And Geology	25
2.8 Hydrology And Watersheds.....	26
2.9 Fire History.....	26
2.10 Vegetation And Important Habitats	27
2.11 Fish And Wildlife	29
2.12 Programs And Projects	37
2.13 User Groups And Recreational Use	39
CHAPTER III. MANAGEMENT OBJECTIVES, ISSUES & STRATEGIES	40
Agency Objective: Protect, Restore & Enhance Fish and Wildlife and Their Habitats	40
1. Maintain big game populations.....	40
2. Manage for species diversity	43
3. Improve and maintain fish populations.....	44
4. Manage for upland birds	44
5. Protect and manage other species	45
6. Protect and restore shrub steppe habitat.....	46
7. Protect and restore riparian habitat	47
8. Protect and restore productive agricultural areas.....	47
Agency Objective: Provide Sustainable Fish and Wildlife-Related Recreational and Commercial Opportunities Compatible With Maintaining Healthy Fish and Wildlife Populations and Habitats. Improve the Economic Well-Being of Washington by Providing Diverse, High Quality Recreational and Commercial Opportunities.....	49

1. Provide public access compatible with fish, wildlife and habitat protection.....	49
2. Improve the economic well being of Washington by providing diverse, high quality recreational and commercial opportunities compatible with fish, wildlife protection and habitat management.	49
3. Provide information about the area and educational opportunities to the public	50
Agency Objective: Ensure WDFW Activities, Programs, Facilities and Lands are Consistent With Local, State and Federal Regulations that Protect and Recover Fish, Wildlife and Their Habitats	50
1. Manage weeds consistent with state and county rules and to protect and recover fish and wildlife and their habitats.....	50
2. Manage species and habitats in compliance with the Endangered Species Act and Washington State fish passage, road management and forest practice rules.....	51
3. Provide fire management on agency lands (Appendix 3).....	52
4. Protect cultural resources consistent with state and federal law.....	52
5. Pay county PILT and assessment obligations.....	52
6. Preserve, protect and improve the watershed in which the MWA is located	52
Agency Objective: Provide Sound Operational Management of WDFW Lands, Facilities and Access Sites.....	53
1. Maintain facilities to achieve safe, efficient and effective management of the wildlife area.	53
2. Maintain other structures and physical improvements	53
3. Maintain equipment	54
4. Pursue funding opportunities	54
5. Assess forest conditions with regard to catastrophic fire, insect and disease risks	54
6. Perform administrative responsibilities	55
7. Protect and apply water rights for best use	55
CHAPTER IV. PERFORMANCE MEASURES, EVALUATIONS AND UPDATES TO THE METHOW WILDLIFE AREA PLAN.....	57
1. The Methow Wildlife Area 2006 performance measures include:	57
APPENDIX 1. Methow Wildlife Area Citizens Advisory Group (CAG) and District Team (DT) Issues and Concerns	59
APPENDIX 2. Methow Wildlife Area Weed Management Plan	68
APPENDIX 3. Fire Control.....	92
APPENDIX 4. Water Rights.....	94
REFERENCES.....	97

List of Figures

Figure 1. Methow Wildlife Area Complex	7
Figure 2. Methow Unit.....	9
Figure 3. Big Buck Unit	11
Figure 4. Big Valley Unit.....	13

<i>Figure 5. Rendezvous Unit</i>	<i>15</i>
<i>Figure 6. Golden Doe Unit.....</i>	<i>17</i>

List of Tables

<i>Table 1. WDFW Priority Habitats in the Methow Valley watershed.....</i>	<i>28</i>
<i>Table 2. 2005 State and Federal Conservation Status and WDFW Priority Habitats and Species (PHS) criteria and priority areas for known wildlife species in the Methow watershed.....</i>	<i>31</i>
<i>Table 3. Top 6 Public Issues, Strategies, and Prioritization : Fall 2005.</i>	<i>64</i>
<i>Table 4. Additional Public Issues and Strategies identified by Methow Citizen’s Advisory Group: Fall 2005.....</i>	<i>66</i>
<i>Table 5. Weeds found on the Methow WLA and their state and county weed class listing.</i>	<i>69</i>

EXECUTIVE SUMMARY

The Methow Wildlife Area Plan summarizes the Washington Department of Fish and Wildlife's (WDFW) land management program on the Methow Wildlife Area. This includes facilitating fish and wildlife habitat protection, restoration, and enhancement, while providing sustainable and wildlife-related recreational and commercial opportunities. The Department goals and objectives, and the Methow Wildlife Area's strategies are listed, prioritized, and specific actions are described in the Wildlife Area Plan. This allows the public to envisage the management actions and decisions taking place on the ground.

The first and foremost goal of WDFW is to provide habitat for healthy and diverse fish and wildlife populations. The Methow Wildlife Area's objectives are to manage for species diversity; game and non-game species; create, restore, and enhance a mosaic of habitat; and maintain and restore native plant communities. WDFW acquires a diversity of land in the Methow to protect important wildlife processes, migratory corridors, and critical habitat that would otherwise be permanently converted to other uses.

Stewardship on Department lands is a high priority on the Methow Wildlife Area. This includes survey, inventory, and mapping wildlife and plant populations, followed by long-term monitoring to determine trends and successes of management techniques over time. Also included in stewardship on WDFW land is weed control activities and restoration projects that protect and enhance fish and wildlife populations and their habitats. The Methow Wildlife Area works closely with local organizations, agencies, knowledgeable private contractors, and experts to use the best-known science for managing the land. Integrated Pest Management (IPM) techniques are used to battle noxious weed infestations, including use of biological controls, chemicals, and mechanical practices. Sustainable agriculture that benefits fish and wildlife and their habitats play an important role. Agricultural techniques on the Methow Wildlife Area include farming practices that provide quality forage and prevent noxious weed invasion, restoration of native vegetative communities in fallowed historic agricultural fields, and well-managed livestock grazing and pasture rotations to enhance native plant communities and increase forage palatability for wildlife. The Methow Wildlife Area will continue working with local agriculturalists and the community to steward the land efficiently, be a good neighbor, achieve wildlife habitat objectives, and protect and conserve wildlife and their associated habitats on WDFW land, as well as adjacent state, federal and private lands.

A second goal of WDFW is to provide sustainable fish and wildlife-related commercial and recreational opportunities. On the Methow Wildlife Area this includes providing access and wildlife viewing opportunities for hunting, fishing, hiking, walking, horseback riding, bird watching, wildflower viewing, butterfly watching, cross country skiing and sightseeing. These activities contribute to the local tourism economy of the Methow Valley, as well as Washington State's recreation industry (hunting and fishing licenses, and access permits). The Methow Wildlife Area is working towards publishing a map of the wildlife area for public distribution that will designate camping and access facilities, trails, and open road systems. The Methow Wildlife Area also is looking for funding opportunities and volunteers to improve campground facilities, improve and maintain non-motorized trail systems, and educate about wildlife and habitat with interpretive signs and informational kiosks.

A third goal of WDFW is to provide operational excellence and professional services. We strive to keep our headquarters, facilities, and equipment maintained and safe, remove and clean-up hazardous materials from Department lands, and prevent resource damage to sensitive habitat on WDFW facilities and lands. We work with the local organizations and volunteers, and include public input and participation where appropriate. The Methow Citizen's Advisory Group (CAG) is one example of how community participation can work closely on local issues. They have been instrumental on developing viable options and potential solutions to improve, maintain, and restore wildlife habitat and wildlife-related recreation opportunities on the Methow Wildlife Area. Anyone who has questions or recommendations about how the Methow Wildlife Area is being managed is encouraged to contact us at 350 Bear Creek Road, Winthrop, WA 98856 or by phone at 509/996-2559.

CHAPTER I. INTRODUCTION

This plan provides management direction for the Methow Wildlife Area (MWA). It will be updated annually to maintain its value as a flexible working document. It identifies needs and guides activities on the area based on the agency's mission and statewide goals and objectives applied to local conditions.

1.1 Agency Mission statement

The Washington Department of Fish and Wildlife serves Washington's citizens by protecting, restoring and enhancing fish and wildlife and their habitats, while providing sustainable and wildlife-related recreational and commercial opportunities.

1.2 Agency Goals and Objectives

The underlined goals and objectives directly apply to the management of WDFW wildlife areas. These goals and objectives can be found in the Agency's Strategic Plan.

Goal I: Healthy and diverse fish and wildlife populations and habitats

- Objective 2: Protect, restore and enhance fish and wildlife populations and their habitats.
- Objective 3: Ensure WDFW activities, programs, facilities and lands are consistent with local, state and federal regulations that protect and recover fish, wildlife and their habitats.

Goal II: Sustainable fish and wildlife-related opportunities

- Objective 6: Provide sustainable fish and wildlife-related recreational and commercial opportunities compatible with maintaining healthy fish and wildlife populations and habitats.
- Objective 7: Improve the economic well-being of Washington by providing diverse, high quality recreational and commercial opportunities.

Goal III: Operational Excellence and Professional Service

- Objective 11: Provide sound operational management of WDFW lands, facilities and access sites.

1.3 Agency Policies

The following agency policies provide additional guidance for management of agency lands.

- Commission Policy 6003: Domestic Livestock Grazing on Department Lands
- Policy 6010: Acquiring and disposing of real property
- Policy 5211: Protecting and Restoring Wetlands:
- Policy 5001: Fish Protection At Water Diversions/Flow Control Structures And Fish Passage Structures
- Policy: Recreation Management on WDFW Lands
- Policy: Commercial Use of WDFW Lands
- Policy: Forest Management on WDFW Lands
- Policy: Weed Management on WDFW Lands
- Policy: Fire Management on WDFW Lands
- Other Policies/Contractual Obligations/Responsibilities

1.4 Methow Wildlife Area Goals

Management goals for the MWA are to preserve and restore habitat for fish and wildlife species while managing for sustainable fish and wildlife related recreational opportunities. This includes maintenance of healthy and functioning habitats and species diversity mainly for wildlife resources,

including the maintenance of healthy populations of game and non-game species and protection and restoration of native plant communities. It also includes providing diverse opportunities for the public to encounter, utilize, and appreciate wildlife and wild areas. Public participation, in the form of a Citizens Advisory Group (CAG), will be encouraged as a means to identify social, cultural, and economic issues important to the people of North-Central Washington. Specific management goals and objectives for the Methow Wildlife Area can be found in Chapter 3.

1.5 Planning Process

Statewide goals listed above shape management priorities on wildlife areas. Individual wildlife area information including why the area was purchased, habitat conditions, species present, and public issues and concerns are evaluated to identify specific wildlife area activities or tasks.

A Citizens Advisory Group (CAG) was established to bring public input, ideas and concerns to wildlife area management. CAG participation in planning adds credibility and support for land management practices and helps build constituencies for wildlife areas. The CAG is made up of one representative from each interest group/entity. CAG members will be spokespersons for their interest groups.

A public scoping forum was initially established to allow Methow citizens the opportunity to express their ideas and concerns. This was followed by the first CAG, to go over the issues at hand, and provide additional input. The CAG then voted to extend their involvement, and set up an additional 3 meetings in November and December 2005 to discuss specific topics of interest for the planning process. The WLA Manager then presented the final Draft of the MWA Plan to the CAG in a power point presentation. The CAG will continue to meet quarterly to work towards goals and objectives described in the MWA Plan, including field trip to see different sites, their wildlife values, and resource potential.

Methow Wildlife Area Citizens Advisory Group

Jennifer Molesworth- USFS Fisheries Biologist, citizen
Craig Boesel- local rancher
Troy Acord- local rancher
Peter Neitlich/ Julie Grialou- Ecologists, citizens
Tom Parmalee- citizen, bird hunter
Janet Ford- Backcountry Horsemen
Tom Doran- Methow Conservancy Board Member, Okanogan Conservation District
Steve Bondi- Methow Conservancy Staff Member, Land Management Advisory Council Rep.
Carl Miller- citizen
Arvid Iverson- Mule Deer Foundation
Gary Logan- Carlton Community Council
Jay Lucas- Methow Valley Sport Trails Association
Rob Crandall- Methow Natives, Native Plant Society
Dana Visalli- Methow Biodiversity Project, botanist
Peter Morrison- Pacific Biodiversity Institute
John Rohrer- USFS District Biologist
Bud Hover- District #2 Okanogan County Commissioner

Wildlife Area plans will incorporate cross-program input and review at the regional and headquarters level by the habitat program, wildlife program, enforcement program, and fish program. Pertinent information from existing species plans, habitat recommendations, watershed plans, eco-regional assessments, etc will be used to identify local issues and needs and ensure that the specific Wildlife Area Plan is consistent with WDFW statewide and regional priorities.

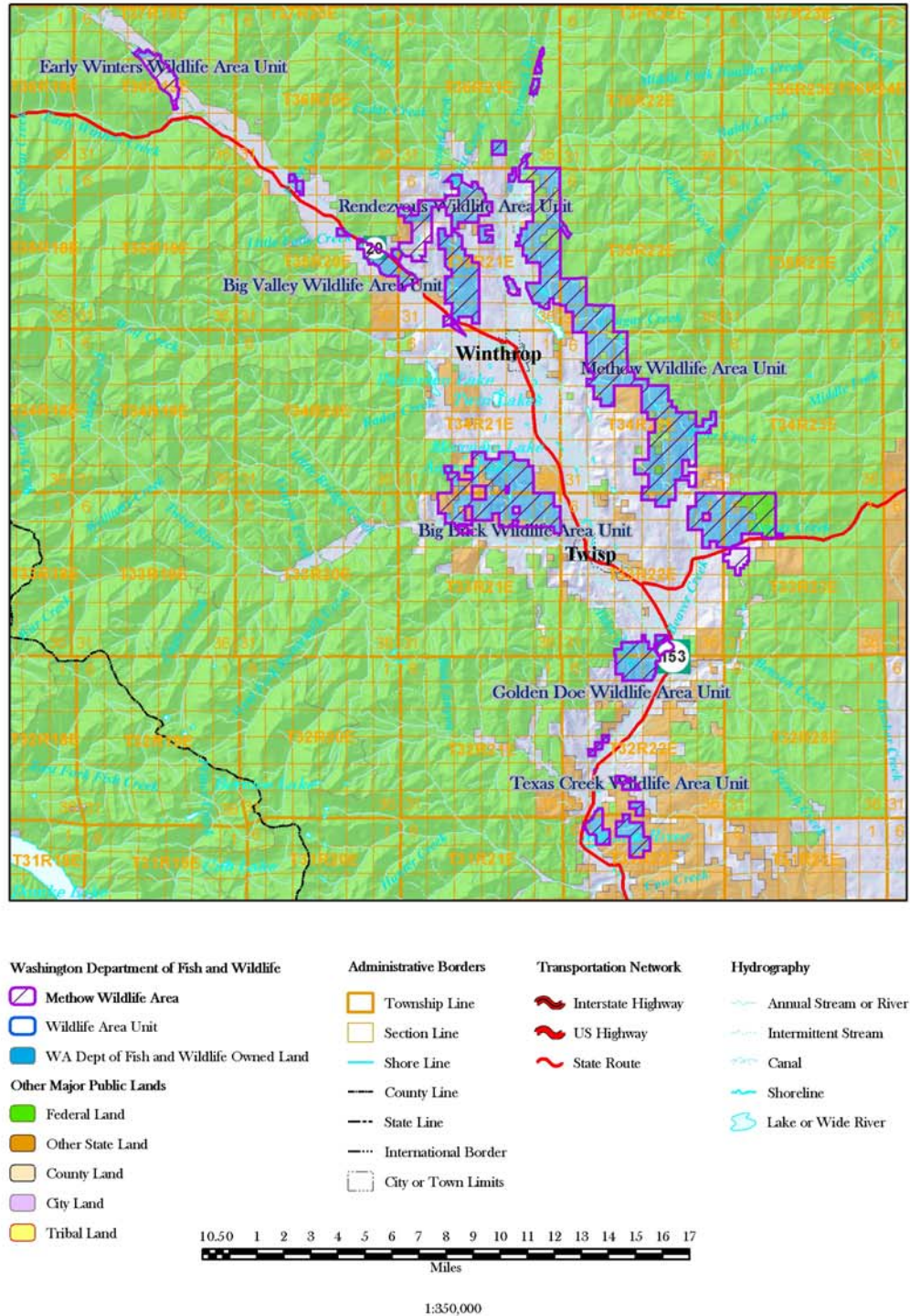
The Methow Wildlife Area plan will be reviewed annually with additional input from the CAG and district team to monitor performance and desired results. Strategies and activities will be adapted where necessary to accomplish management objectives.

CHAPTER II. AREA DESCRIPTION AND MAPS

2.1 Property Size & Location

The Methow Wildlife Area is located in the Methow River Watershed on the western half of Okanogan County, in northcentral Washington (Figure 1). The 31,000-acre Methow Wildlife Area consists of 5 Wildlife Area Units spread over the linear north-south Methow Valley, with many smaller parcels of critical habitat scattered throughout the watershed. WDFW Headquarters is located along the main Methow Unit, situated 3 ½ miles from the town of Winthrop, WA. Below is the property size, location and legal description for each of the Wildlife Area Units, see also Figure 2-7 Maps.

Figure 1. Methow Wildlife Area Complex

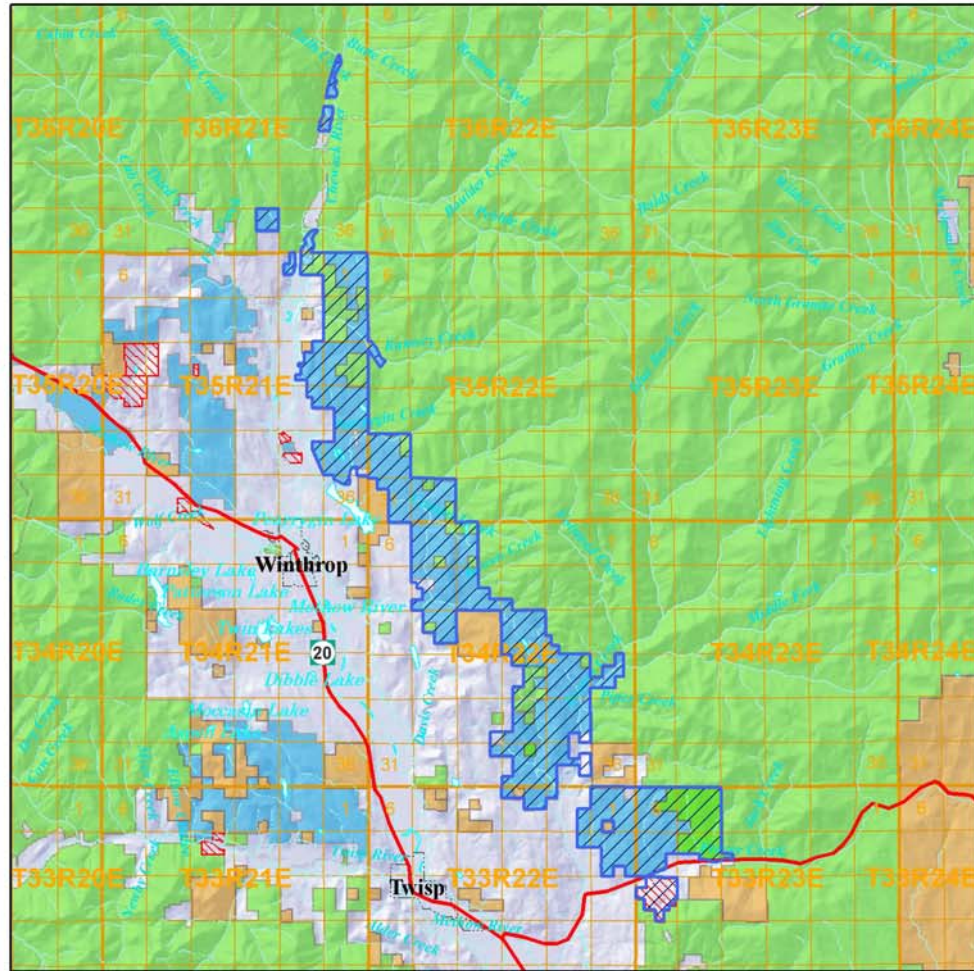


Methow Unit

The Methow is the largest and oldest of the units in the complex. It is 14,800 acres, located in the foothills on the east side of the Methow Valley and was purchased primarily for mule deer winter range. It is a long narrow strip of land varying in width from a half mile to two miles, and stretches from Falls Creek on the north end, to Frazer Creek and Highway 20 on the south end—a distance of about eighteen miles. The area is bounded on the east and north by U.S. Forest Service land (Okanogan/Wenatchee National Forest), and on the west and south by private land. Elevations vary from 2100 feet in the Frazer Creek area to just under 4000 feet at a point north of Campbell Lake. The area is generally south and southwest facing.

Legal description: T8N, R44E, Sec 2-5; T9N, R43E, Sec36; T9N, R44E, Sec 26-35; T9N, R45E, Sec 3-10 and 17-19.

Figure 2. Methow Unit



Washington Department of Fish and Wildlife

- Methow Wildlife Area Unit
- Conservation Easement
- WA Dept of Fish and Wildlife Owned Land
- Major Public Land Ownership**
- Federal Land
- Other State Land
- County Land
- City Land
- Tribal Land

Administrative Boundaries

- Township Line
- Section Line
- Shore Line
- County Line
- State Line
- International Border
- City or Town Limits

Transportation Network

- Interstate Highway
- US Highway
- State Route

Hydrography

- Annual Stream or River
- Intermittent Stream
- Canal
- Shoreline
- Lake or Wide River

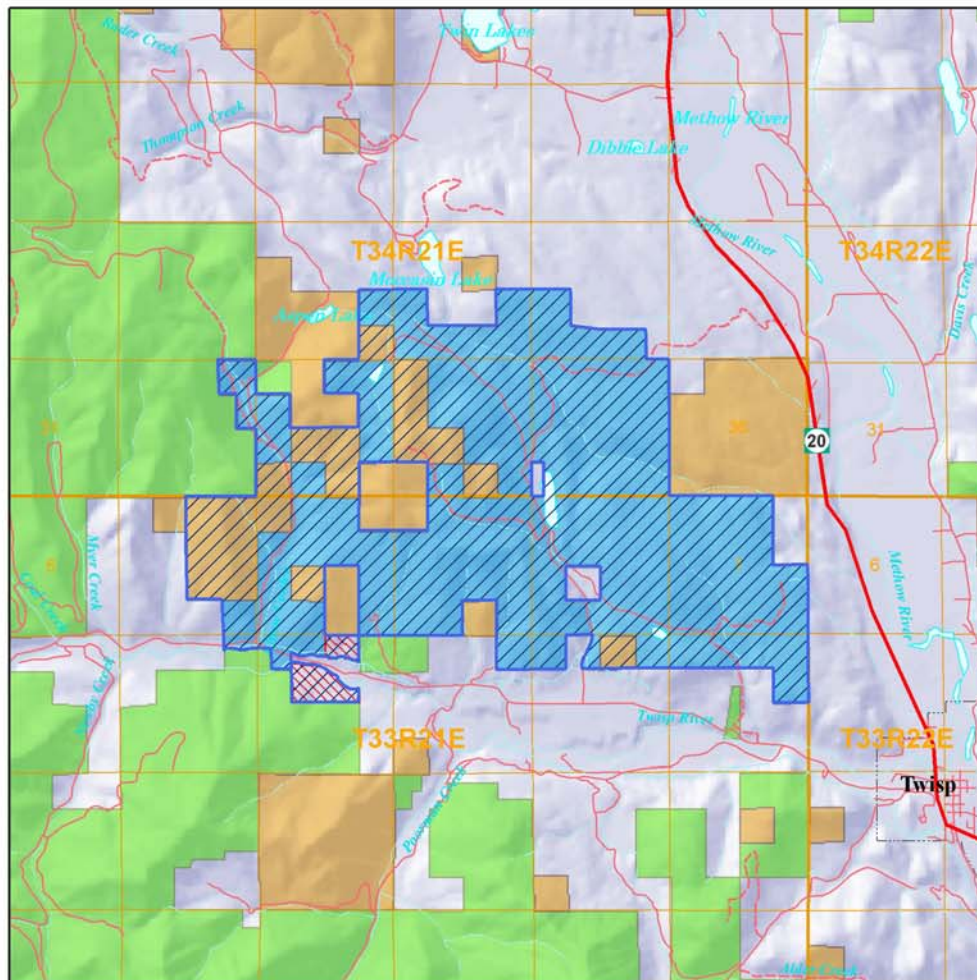
1:230,000
1 inch equals 3.6 miles

Big Buck Unit

The Big Buck is 4,386 acres which lies to the north and west of the confluence of the Twisp and Methow Rivers, the southeast corner being about a mile northwest of the town of Twisp. In its entirety, the Big Buck totals 5150 acres including Department of Natural Resources leased land, which is managed by WDFW. The area is bound on the west by USFS and DNR land, and on the north, east and south by private land.

Legal description: T8N, R44E, Sec 2-5; T9N, R43E, Sec36; T9N, R44E, Sec 26-35; T9N, R45E, Sec 3-10 and 17-19.

Figure 3. Big Buck Unit



Washington Department of Fish and Wildlife

Big Buck Wildlife Area Unit

Conservation Easement

WA Dept of Fish and Wildlife Owned Land

Major Public Land Ownership

Federal Land

Other State Land

County Land

City Land

Tribal Land

Administrative Boundaries

Township Line

Section Line

Shore Line

County Line

State Line

International Border

City or Town Limits

Transportation Network

Interstate Highway

US Highway

State Route

Secondary Road

Trail

Hydrography

Annual Stream or River

Intermittent Stream

Canal

Shoreline

Lake or Wide River

1:75,000

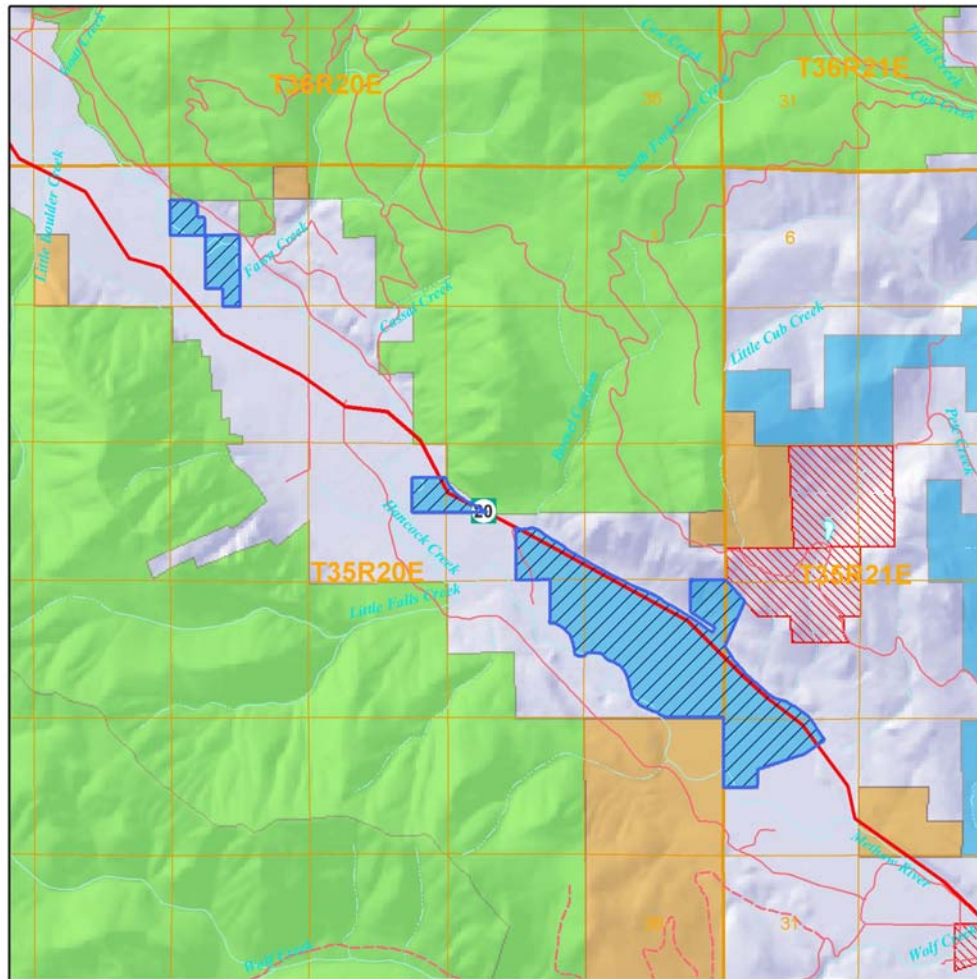
1 inch equals 1.2 miles

Big Valley Unit

The Big Valley Wildlife Area is 1,164 acres located about 5 miles northwest of Winthrop and lies between Highway 20 and the Methow River. The area is mostly flat with little elevation change.

Legal description: T8N, R44E, Sec 2-5; T9N, R43E, Sec36; T9N, R44E, Sec 26-35; T9N, R45E, Sec 3-10 and 17-19.

Figure 4. Big Valley Unit



Washington Department of Fish and Wildlife

- Big Valley Wildlife Area Unit
- Conservation Easement
- WA Dept of Fish and Wildlife Owned Land
- Major Public Land Ownership**
- Federal Land
- Other State Land
- County Land
- City Land
- Tribal Land

Administrative Boundaries

- Township Line
- Section Line
- Shore Line
- County Line
- State Line
- International Border
- City or Town Limits

Transportation Network

- Interstate Highway
- US Highway
- State Route
- Secondary Road
- Trail

Hydrography

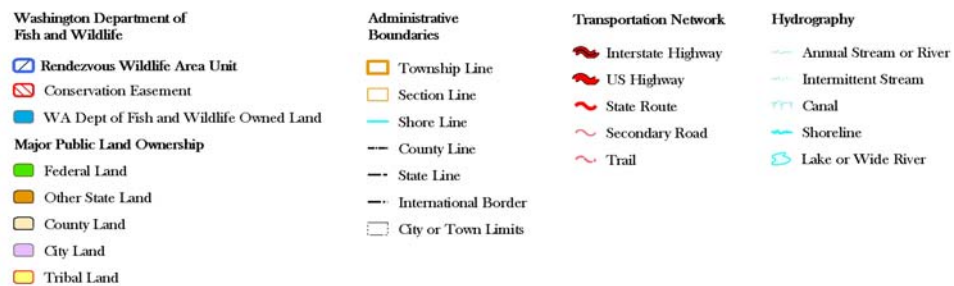
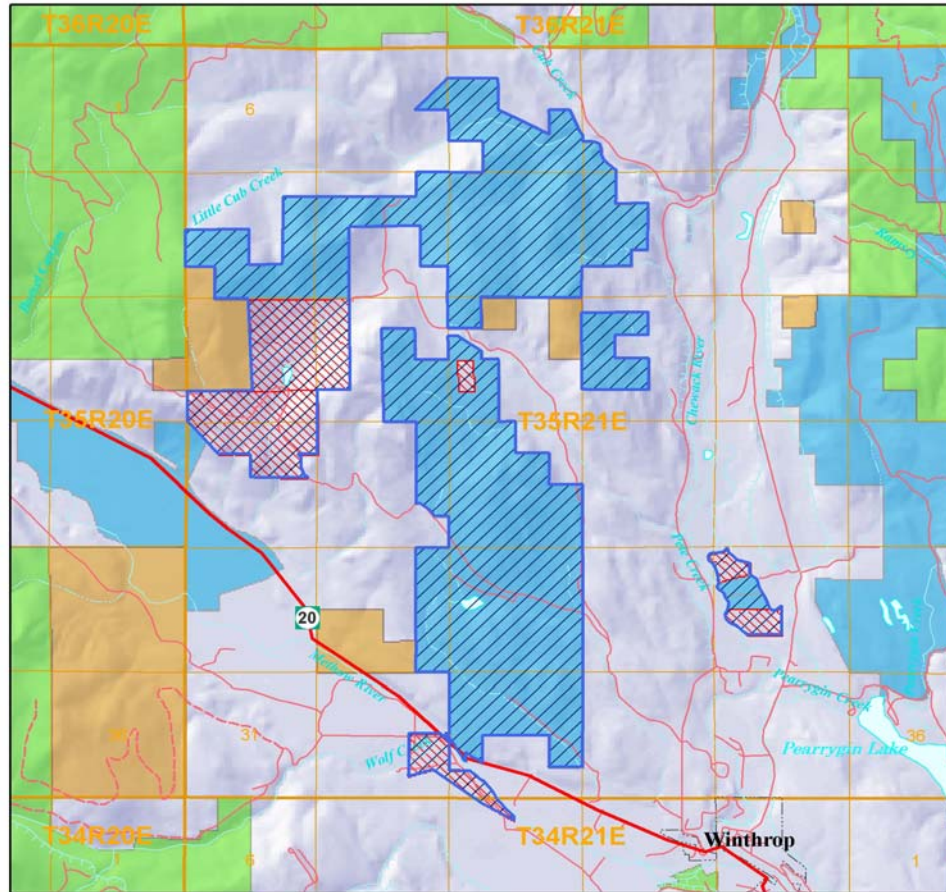
- Annual Stream or River
- Intermittent Stream
- Canal
- Shoreline
- Lake or Wide River

1:75,000
1 inch equals 1.2 miles

Rendezvous Unit

The Rendezvous Wildlife Area is 4,225 acres located north of the town of Winthrop, between the Chewuch and Methow Rivers. All of the area is surrounded by private land. Elevations range from 1800 to 3500 feet.

Legal description: T8N, R44E, Sec 2-5; T9N, R43E, Sec36; T9N, R44E, Sec 26-35; T9N, R45E, Sec 3-10 and 17-19.



1:75,000
1 inch equals 1.2 miles

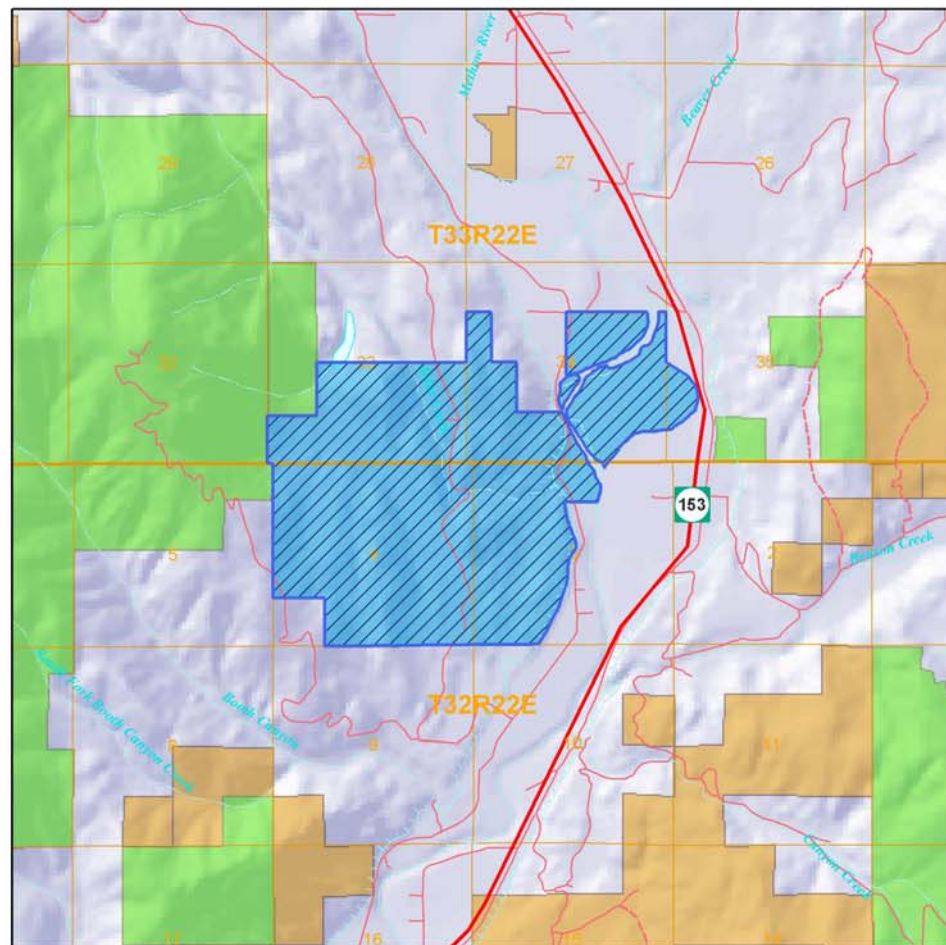
Figure 5. Rendezvous Unit

Golden Doe Unit

The Golden Doe Wildlife Area is 1,514 acres located about 3 ½ miles south of Twisp off of the west side county road. The unit is bounded on the west by USFS lands and is bounded on all other sides by private lands. Elevation ranges from 1480 feet on the Methow River bottom to 3000 feet in the southwest corner.








Legal description: T8N, R44E, Sec 2-5; T9N, R43E, Sec36; T9N, R44E, Sec 26-35; T9N, R45E, Sec 3-10 and 17-19.

Figure 6. Golden Doe Unit



Washington Department of
Fish and Wildlife

-  Golden Doe Wildlife Area Unit
 -  Conservation Easement
 -  WA Dept of Fish and Wildlife Owned Land
- Major Public Land Ownership**
-  Federal Land
 -  Other State Land
 -  County Land
 -  City Land
 -  Tribal Land

- Administrative Boundaries**
-  Township Line
 -  Section Line
 -  Shore Line
 -  County Line
 -  State Line
 -  International Border
 -  City or Town Limits

- Transportation Network**
-  Interstate Highway
 -  US Highway
 -  State Route
 -  Secondary Road
 -  Trail

- Hydrography**
- Annual Stream or River
 - Intermittent Stream
 - Canal
 - Shoreline
 - Lake or Wide River

1:50,000

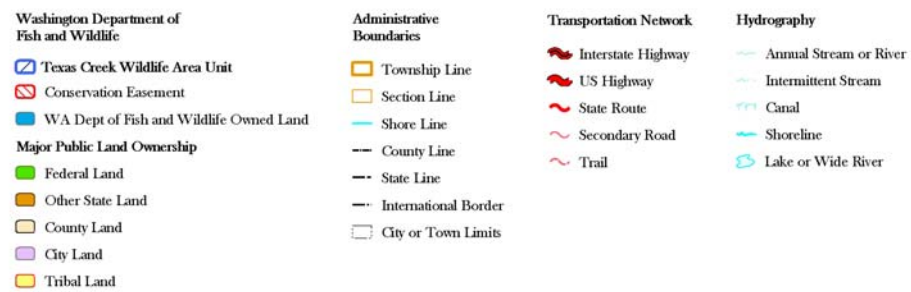
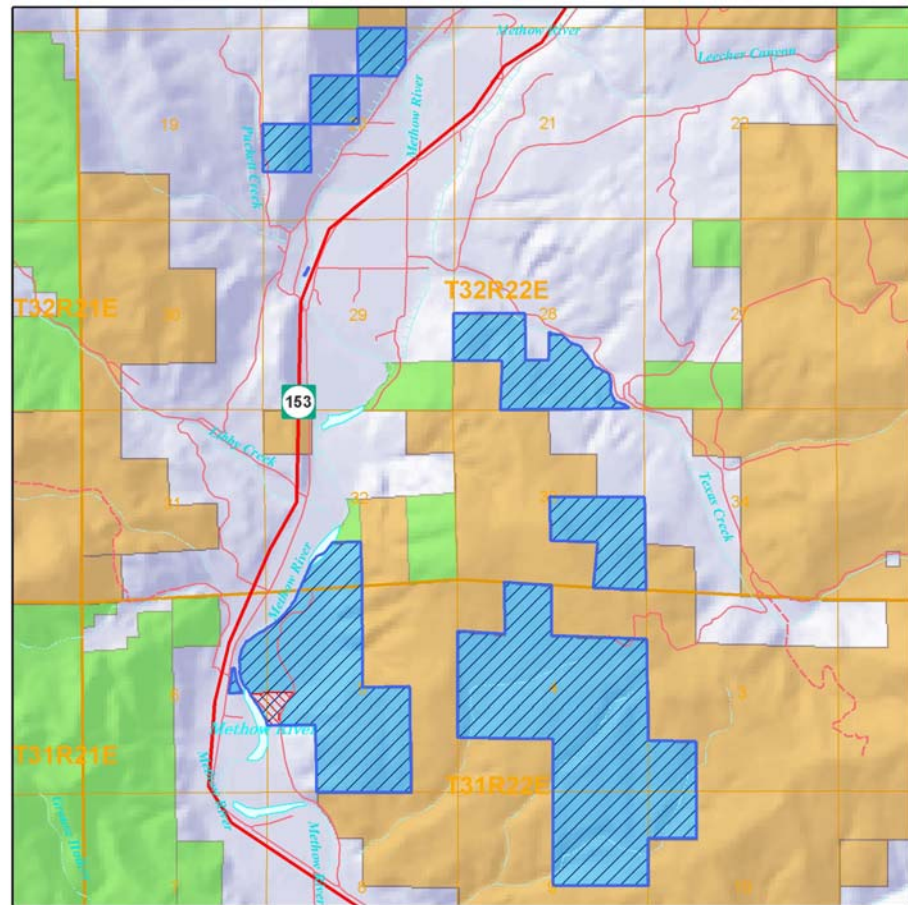
1 inch equals 0.79 miles

Texas Creek Unit

Texas Creek W.A. is 1,371 acres, which can be accessed from the Texas Creek Road (approximately 1 ½ miles from Carlton) from Stokes Road (approximately 3 miles south of Carlton on Highway 20). The area lays in four parcels surrounded by Department of Natural Resources land to the east of the Methow River. Elevation ranges from 1390 feet on the Methow River to 2950 feet on the east boundary.

Legal description: T8N, R44E, Sec 2-5; T9N, R43E, Sec36; T9N, R44E, Sec 26-35; T9N, R45E, Sec 3-10 and 17-19.

Figure 7. Texas Creek Unit



1:50,000
1 inch equals 0.79 miles

2.2 Purchase History And Purpose

Pre-Settlement:

Prior to the settlement of the Methow Valley by Anglos, the Methow Indian Tribe lived on the land and utilized the Methow's natural resources. They were permanent residents of the area until the early 1700's. Acquisition of horses enabled the native people to become nomadic, using the area during the spring, summer and fall for food gathering, then moving to the Columbia River Basin for the winter where they winter pastured their animals. They gathered and processed native plants, animals and fish for winter use. Little is known about wildlife populations at that time but apparently salmon and mule deer were common. Fur companies and trappers heavily trapped the Methow from early to late 1800's, decimating many wildlife species we see today. Gold miners were the first "permanent" residents of the area in the mid-1800.

Early Settlement:

The first homesteaders came into the Valley in the late 1800's; these earliest settlers were primarily cattle ranchers. Cattle were brought to the Methow in the spring, where they grazed through the summer and into the fall. They were gathered and moved onto wintering areas along the Okanogan and Columbia rivers. Personal communications with several old timers revealed that for a number of years in the 1860's and 1870's, winters were fairly mild, and most of the livestock was left on the range year around. This stock included cattle, horses, and sheep, and their numbers increased rapidly during this period.

Both deer and livestock sustained heavy losses during the winter of 1889-90. Deer populations remained low for the next 30 years (see Wildlife section). Cattle numbers peaked around 1900, but sheep numbers continued to increase during the early 1900's. Mason Thurlow brought the first plow into the Valley over the Chliwist Trail in the early 1890's. The first range allotments on U.S. Forest Service lands were issued in 1909.

Immediate Prior Ownership to the Department:

Those people who owned land in the Methow Valley around the turn of the century were farmers, cattlemen, and loggers (or a combination of all three). Most of the tilled land was dryland farmed.

Dryland farming was threatened in the late 1930's to early 1940's by drought and agricultural damage caused by increasing numbers of deer. Washington State did not have damage control laws, and therefore the predecessors Carl Crouse, Norm Knott and others insightfully assisted the State in buying lands that were sustaining the worst of the damage. In December 1940, the State Game Commission authorized the establishment of the "Methow Land Acquisition Project" to include 15,210 acres of land on the east side of the Methow Valley.

Initial Acquisitions:

During the initial acquisition period from 1941 until 1959, the Department purchased 8,869 acres in fee. Thirty homesteads were involved. Prices paid for these lands were as low as one dollar per acre, and many were purchased for back taxes. As noted earlier, these lands were purchased primarily to alleviate deer damage problems. World War II put strain on Department funding, and since they did not maintain or develop the lands that had been purchased, abandoned alfalfa fields died out from lack of care, and the deer damage problems moved down to the valley floor. To alleviate these problems, the Department entered into sharecropper (lease) agreements to put alfalfa fields back into production, and began a summer fallow/small grain food plot program.

In addition to the sharecropping and food plot lands noted above, the Department entered into a cooperative agreement with the Department of Interior Fish and Wildlife Service (USFWS) for purchase of an additional 3,155 acres of federal land. (See Cooperative agreement dated February 11, 1949). The land is managed by the WDFW, but the Department of Interior reserved all timber and mineral rights. It was at this time that the Methow Game Range (Methow Wildlife Area) became a federal aid project.

Subsequent Acquisitions:

Between 1959 and 1972, no acquisitions were made in the Methow, but in the early 1970's, the people of the State of Washington passed a referendum that included funding for parks and recreation. This funding was administered by the Interagency Committee on Outdoor Recreation (IAC), and allowed the Department to purchase property for wildlife habitat. Two properties in the Beaver Creek drainage totaling 2000 acres were added to the Methow Wildlife Area Unit in 1972-73. Total cost of acquisition was \$122,000 (\$61 per acre).

In 1975, the Department purchased the Big Buck Ranch (Big Buck Wildlife Area) in the Twisp River drainage. Two thousand seven hundred and forty seven (2,747) acres were initially purchased for \$482,000 (\$175 per acre), although this cost per acre is somewhat misleading because there was a large house, hay barn, equipment shed, shop and tack barn include in the sale.

In the 1980's, two land exchanges were completed on the MWA. They were:

1. Campbell/Prewitt/WDFW: C.D. Prewitt purchased 240 acres of winter range from O.C. Campbell in the Pipestone Canyon area and then traded it to the Department for the residence, out buildings and 118 acres on the Big Buck W.A. A number of restrictions were put on Prewitt's deed so that the property he received could not be subdivided or used for any commercial purpose other than farming and ranching.

2. E. Root/WDFW: In 1989, a land exchange between Eldon Root and the department was completed. The Department acquired 442 acres of mule deer winter range in the lower Ramsey Creek area in exchange for 38 acres on Bear Creek, 32 acres on the Twisp River and \$93,000.

In 1990, the Washington State Legislature appropriated \$50 million to be used by the Washington Wildlife and Recreation Program (WWRP) for land acquisition and other wildlife and recreation projects. The funding amount has been upgraded several times since the initial appropriation was made. The Department has used this funding to acquire about 14,000 acres of critical habitat for wildlife in the Methow Valley. In addition, conservation easements have been purchased on 1269 acres.

3. Methow Wildlife Area Unit is managed primarily for mule deer winter range and migratory routes (totaling 14,800 acres). Habitats and vegetation vary from heavily timbered areas (Ponderosa pine, Douglas fir and pine grass) on north facing sites, to open shrub-steppe (bitterbrush, sagebrush, and bunch grasses) on south and west facing slopes. Aspen stands and shrubby draws are found on deeper soils, associated with underground water sources. Aspen, cottonwood, rose, snowberry, and a variety of shrub and forb species dominate riparian areas along most stream courses which are critical habitat within the greater shrub-steppe ecosystem for

songbirds, cavity nesters, amphibians and reptiles, small mammals, nesting Golden Eagles, and 3 species of forest grouse.

4. Rendezvous Wildlife Area Unit was purchased for mule deer winter range and migratory corridors, and it also serves as a staging area during early spring green up. South facing slopes are primarily sagebrush, bitterbrush and bunch grasses. North slopes are timbered with Douglas fir and Ponderosa pine. Cub Creek, Little Cub Creek and the Riser Lake area have aspen and shrub dominated riparian areas, which are important mule deer fawning areas, and nesting habitat for cavity nesters and migratory songbirds.



Mule Deer Winter Range

5. Big Valley Wildlife Area Unit was purchased for biodiversity and endangered fisheries protection. It is in the migratory path for deer moving north and south from winter ranges in the lower valley to summer ranges in the upper Methow Valley and Pasayten Wilderness. Riparian areas along the Methow River are critical for neo-tropical birds, mule and white-tailed deer, large mammals such as bears, cougars, bobcats, and coyotes, mesocarnivores such as mink, otter and beaver, and shading of the Methow River for endangered salmon and steelhead. Several side channels within the riverine floodplain provide winter habitat for fisheries, and important water storage for recharge of the Methow River. Farm fields along highway 20 are planted with alfalfa, cereal grains and native vegetation to increase food and cover for a number of species.



Momma Bear with Cub

6. Golden Doe Wildlife Area Unit was acquired for mule deer winter range and biodiversity associated with the large riparian areas on the Methow River. It is primarily east and south facing slopes, dominated by bitterbrush and bunchgrasses along the east face of McClure Mountain. Alder Creek bisects the unit from northwest to southeast. A large riparian area on the east side of the Methow River, known as Prewitt Island, is home to a wide variety of wildlife.

7. Texas Creek Wildlife Area Unit was purchased for mule deer winter range and salmonid habitat on the mile of Methow riverfront included. The area is primarily west and south facing slopes dominated by bitterbrush, sage and bunchgrasses. It is considered important down-valley shrub-steppe supporting a variety of songbirds, herptiles, and wintering bald eagle roosts, and other wildlife species. Many years ago much of the benches on the upper elevations were dryland farmed, as were approximately 100 acres on the flats next to the river.

8. Big Buck Wildlife Area Unit was primarily purchased for mule deer migration corridors. Although some mule deer winter here, it is primarily used as spring and fall range for deer migrating to and from summer ranges in the Twisp River drainage and the Sawtooth Wilderness. Habitats and vegetation vary from heavily timbered areas (Ponderosa pine, Douglas fir and pine grass on the north facing aspects, to open shrub-steppe (bitterbrush, sagebrush, and bunch grasses) on the south and east facing slopes. Riparian vegetation dominates around lakes and ponds and stream courses. Key habitat for biodiversity in the Big Buck W.A. includes Deadhorse Lake, Shaw Lake, Peters Puddles, and Aspen Lake.

Several additional areas have been incorporated into the Methow W.A. since early 2000. In 2003, the Department purchased the Prewitt/PPM ranch (2160 acres) for mule deer winter range on the uplands and riparian biodiversity on the Methow riverfront. Prewitt continues to operate his cattle on the land until 2010, when the property becomes part of the Methow W.A. Also in 2003, the Department established a conservation easement on 613 acres on the Goldman property adjacent to the Rendezvous W. A. In 2004/05, the Lloyd Ranch was purchased by the Department, which encompassed nearly 600 acres directly adjacent to state land within the Methow W.A.



Riparian Vegetation Around A Lake

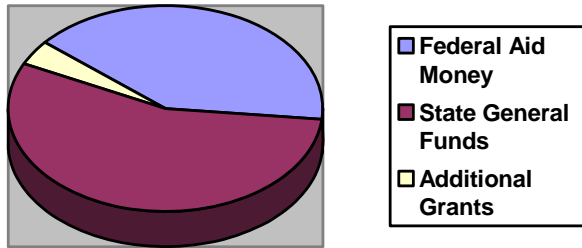
2.3 Ownership & Use Of Adjacent Lands

The Methow Wildlife Area is scattered large parcels spread throughout the Methow Watershed. It predominately protects the upland shrub-steppe foothills, surrounded by the lowland agricultural and human development between the towns of Carlton, Twisp, Winthrop, and Mazama. The montane forested region in elevation surrounding the MWA is predominantly US Forest Service, managed by the Methow Valley Ranger District. Department of Natural Resources also owns and manages approximately 10,000 acres north of Carlton, within the shrub-steppe foothill elevation.

The Methow Valley has grown in the past decade to become a destination area for recreationalists, tourism, and second home owners. Therefore the Dept lands have played a critical role in protection of the open hillslopes from human development, fending off fragmentation and maintaining the habitat corridors necessary for wildlife life processes and migration.

2.4 Funding

Funding for management of the wildlife area comes from two sources including General State Funds (GSA) and Federal Aid in Wildlife Restoration Funds. The budget for the 2005 fiscal year is \$157,624 which supports all operations and maintenance including salaries on the Wildlife Area.



Methow Wildlife Area Funding Sources 2005

Staff positions supported by GSA and PR funds include:

- 1.0 FTE Wildlife Area Manager (Wildlife Biologist 3)
- 1.0 FTE Assistant Wildlife Area Manager (Maintenance Mechanic 2)
- 0.25 FTE Noxious Weed Control Assistant (Habitat Tech I)

Additional funds for the wildlife area are being sought to assist with operation and maintenance, as well as funds for wildlife surveys, irrigation and fencing infrastructure, and for wildlife habitat restoration projects. Legislature allocations are expected (hoped for) for 2006 for restoration on Perrygin Creek Burn area (wildfire on WDFW land in 2005) and for irrigation infrastructure to support wildlife habitat and local agricultural economy in the Methow.

The Department will, as part of the implementation of this plan, submit grant proposals and applications and identify other strategies to address unfunded management needs on the wildlife area.

2.5 Managerial History

There was no manager on the Methow W. A. between 1940 and 1949, when the Department's first acquisitions were made, and few historical records are available. Jap Burge, the local Department of Game packer, and wildlife agent George McDaniel accomplished most of the work done on the area. From this time until 1954, the Department operated a pheasant game farm not far from where the present HQ is located.

In 1949/50, John Mandery became the first "game range keeper" in the Methow, and the HQ residence, garage and barn were constructed. There was much local sentiment against the Department for purchasing the land, and it was felt that Mandery could calm the local citizenry. He kept busy building fence, and replanting alfalfa and cereal grain crops.

In 1952, Jim Clement became range keeper, and he started many shrub plantings, timber thinning and farming projects.

In 1956, Walt Bens took over and continued Clement's projects, as well as establishing a more vigorous farming program, and weed control. Walt also experimented with bitterbrush plantings, and is credited with construction of several spring developments and water impoundments.

From 1965 until 1971, Frank Harbert was the area manager. He continued the programs of his predecessors, and was instrumental in the design of the IAC campgrounds. Many of the routed cedar signs for the area are of his handiwork.

Jim Mountjoy was the area manager for the Methow Wildlife Areas from 1972 to 2005, during a time of huge social and economic change in the Valley. The Washington Wildlife and Recreation Program (WWRP) started during Mountjoy's tenure. This program helped the Department acquire over 14,000 acres in the Methow Valley. WDFW land ownership expanded from an initial 12,000 acres prior to 1972, to the current 29,500 acres in 2005. Jim helped oversee this land, was involved with 2 large scale mule deer research projects, developed a Americans with Disabilities (ADA) Hunters program, and worked with local user groups to enjoy the Methow Wildlife Areas for recreation purposes that include watchable wildlife, mountain-biking, cross-country skiing, as well as traditional hunting and fishing. He also experimented with grass restoration and worked with local agriculturalists and ranchers to improve mule deer habitat throughout the Methow.

Kimberly Romain-Bondi is currently the wildlife area manager. She started her appointment in May 2005.

2.6 Climate

In a rainshadow of the Cascade Mountains, the Methow is known for its extreme weather patterns of hot, dry air from the eastern Columbia Basin in summer, and cold dense arctic air from the north in the winter. The area surrounding Winthrop is generally warm and dry, with precipitation falling primarily from snow with heavier rains in the early winter and late spring. Occasional heavy thunder showers in the summer can lead to localized flash flooding and fires, often triggered through lightning strikes. The Western Regional Climate Center Data Base (1998) recorded average data between the years 1931 and 1998:

The highest temperatures are from June through September with an annual average of 67.2° F (annual average max: 86.3° F in July). The lowest temperatures are from December through March with an annual average of the coldest month in January with 19.8° F (annual average min.: 10.6° F). Annual total precipitation averages 14.26 inches. The driest period of the year is from July through September (annual average low in July: 0.55 inches) and the wettest period is from November through February (annual average high in December: 2.8 inches). Between the months of November and April precipitation is usually in the form of snow. The greatest depth accumulates between December and March.

2.7 Soils And Geology

The Methow Valley is carved in sedimentary, volcanic, and plutonic rocks on the east flank of the North Cascade Mountains. These rocks record an exceedingly complex geologic history of colliding tectonic plates, faulting, volcanic eruptions, intrusions of granites, and sedimentation dating back over 400 million years. Most of the rocks exposed in the present Methow Valley date

from the Upper Jurassic and Cretaceous periods (about 150 to 65 million years ago). The mountainous topography began to form only a few tens of millions of years ago as the ancestors of modern streams began to erode the land, and, beginning about 1.5 million years ago, glaciers added a final touch.

Sandstone and shale, the oldest rocks exposed in the Methow Valley, are a thick accumulation of mud and sand from ocean sediments which filled the ancient Methow Ocean about 200 to 100 million years ago. As tectonics continued, rivers and streams on top of Methow Ocean sedimentary rocks deposited sandstone and conglomerates, and volcanic rocks from a short-lived volcanic arc shaped the Methow during the Cretaceous period about 100 million years ago (<http://www2.nature.nps.gov/geology/usgsnps/noca-/t10methow.html>). During the latest Ice Age near the end of the Pleistocene Epoch (25,000 to 13,000 years ago), the Methow Valley and most of the surrounding North Cascades were inundated by glacial ice (Tabor and Haugerud 1999).

The Cordilleran Ice Sheet (roughly 1 mile thick) slid south from British Columbia, smoothing and rounding lower peaks as it advanced. Melting water associated with the recession of the ice sheet poured through the valley(s) and deposited till in the valley bottomland. The interrupted pauses of glacial melting caused terraces to form at different elevations, resulting in stair-step landforms throughout the valley. Relics of meltwater and ice dams, which pooled and diverted water from ice sheets, carved out the Methow as we see it today.

2.8 Hydrology And Watersheds

“The Methow River Water Resource Inventory Area (WRIA) 48 is located in north central Washington State. A tributary of the Columbia River, it is bordered on the west by the Cascade mountains, on the north by Canada, on the east by Buckhorn Mountains and the Okanogan River drainage, and on the south by the Columbia River and the Sawtooth Ridge. Draining nearly 1,890 square miles (1,208,746 acres), the Methow River flows southward for more than 80 miles through western Okanogan County before emptying into the Columbia River near the town of Pateros” (Andonaegui 2000).

2.9 Fire History

The USFS has conducted fire history analyses in different areas throughout the Methow watershed and have characterized the historic fire regime as frequent and low severity. Future funding for a fire history analysis on Department lands would benefit shrub-steppe, aspen, and ponderosa pine woodland habitats and associated wildlife species and would guide future land management decisions.

Fire history of the lower Pearrygin Creek drainage shows an average fire return interval of 16.9 years between the time periods of 1725 to 1911 (P. Olsen pers. comm. 2005, unpubl. data). Fire suppression over the last 60-100 years has changed the stand composition and structure of native habitats. The result has been increases in young ponderosa pine densities, the encroachment of conifers into shrub steppe and aspen woodlands, and the encroachment of Douglas fir into ponderosa pine stands. In addition, long-term fire suppression has increased the shrub component of shrub-steppe landscapes in the Methow watershed. As a result, early and mid-successional plant communities are in the minority and many fire dependent plant species are in decline.

2.10 Vegetation And Important Habitats

The native vegetation in the MWA is variable, however lower elevation hillsides are dominated by shrub-steppe or eastside grasslands, and/or dry coniferous ponderosa pine forests. Aspen woodlands and eastside riparian woodlands and wetlands also occur throughout the MWA (Habitat types classified for WA and OR are described in Johnson and O'Neil, 2001). These vegetation types are classified as WDFW Priority Habitats (PHS list, Table 1).

Specific to the Methow, meadow-steppe communities are characterized by grass cover dominated by wheatgrass and bluegrasses, with a rich component of broad-leaved forbs (Daubenmore 1970). The dominant grass communities are composed of bluebunch wheatgrass (*Psuedoregnaria spicata*) and Idaho fescue (*Festuca idahoensis*). Shrub-steppe consists of one or more layers of perennial grasses below a discontinuous layer of shrubs including but not limited to bitterbrush (*Purshia tridentata*) and sagebrush (*Artemisia tridentata*; Daubenmore 1970).

Ponderosa Pine woodlands are scattered throughout, with ponderosa pine species dominating canopy cover, and an open vegetative understory. Common shrub species in pine woodlands are snowberry, rose, serviceberry, and currant. Fire suppression has increased stand densities in pine woodlands, and ongoing thinning projects are underway in the Methow Valley to limit the potential for a catastrophic fire.

Riparian corridors and wetlands offer important vertical structure in the vast extent of open steppe habitat. These dense stands of trees and/or shrubs provide hiding, escape and thermal cover, shade, foraging and nesting sites, perches, and water sources. Often these highly productive communities contain both plant and wildlife species that are endangered or threatened. Riparian habitat occurs as narrow zones of natural vegetation associated with water bodies such as rivers and creeks, lakes and ponds (both ephemeral and permanent). Common overstory trees in riparian woodlands include black cottonwood, aspen, and water birch, while the understory vegetation is composed of many hydrophytic shrub species such as mock orange, alder, elderberry, willow, rose, and currant.

Shrub Plantings:

From the mid-1950 until the mid-1960, shrub planting was one of the major programs on the area. Some of these plantings have become decadent, died, or have been destroyed, but many still exist. Shrub plantings include chokecherry and bitterbrush plants, eaten by deer and the latter used extensively by black bears, sand cherries and silver berries were planted for grouse, quail and Hungarian partridge, and Tartarian honeysuckle was planted as cover and food for non-game birds.

Plantings were done in a number of ways. Bitterbrush (1 and 2 year old seedlings) were planted on suitable sites, however mortality rates up to 80-90% in the first year allowed bunchgrasses and noxious weeds to envelope the site. In the late 50's, a deep V-plow was used to dig furrows for planting seed, however plants showed poor vigor and mechanical treatments were not typically done in mule deer winter range.

In 1988, a shrub-planting project was undertaken on Frazer Creek. Water storage tanks were installed near three springs and gravity lines were put in to dripline water about 4000 shrubs. The first 2 years were successful, but drought conditions and damage to drip lines by porcupines led to the termination of the project. Some of the more drought tolerant plants continue to grow.

In 1992, 1200 chokecherry and serviceberry seedlings (bare root) were planted on the Vanderpool place below Sullivan pond. Many still survive, but growth has been poor due to heavy deer use and competing vegetation.

There are plans to plant riparian shrubs at Riser Lake as a community restoration project for 2006-2009.

Riparian Restoration and Rehabilitation:

Between 1995 and 2000, the Department worked with the Pacific Watershed Institute to obtain funding for several rehabilitation projects on the Chewuch River and Cub Creek. Projects that were completed include: 1) fencing, instream structures, shrub and tree planting, and road reconstruction in the WDFW campground on the Chewuch River just south of Falls Creek, 2) Removal of a culvert fish barrier, and riparian fencing on the Little Cub Creek grazing allotment, and 3) burning of a decadent aspen stand on Little Cub Creek.

Fencing projects were also constructed to prevent human impacts and/or degradation by cattle to several riparian areas. These include: Riser Lake in the Rendezvous (2001, 2006), Beaver Creek Campground in the Methow W.A. (2001), and Peters Puddles within Big Buck W.A. (2005).

Table 1. WDFW Priority Habitats in the Methow Valley watershed

(<http://wdfw.wa.gov/hab/phshabs.htm>)

Habitat Type or Element	Priority Area
Aspen stands	Pure or mixed stands of aspen greater than 0.8 ha (2 acres). Criteria: High fish and wildlife species diversity, limited availability, high vulnerability to habitat alteration.
Cliffs	Greater than 7.6 m (25 ft) high and occurring below 1524 m (5000 ft). Criteria: Significant wildlife breeding habitat, limited availability, dependent species.
Riparian	The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems, which mutually influence each other. In riparian systems, the vegetation, water tables, soils, microclimate, and wildlife inhabitants of terrestrial ecosystems are influenced by perennial or intermittent water. Simultaneously, the biological and physical properties of the aquatic ecosystems are influenced by adjacent vegetation, nutrient and sediment loading, terrestrial wildlife, and organic and inorganic debris. Riparian habitat encompasses the area beginning at the ordinary high water mark and extends to that portion of the terrestrial landscape that is influenced by, or that directly influences, the aquatic ecosystem. Riparian habitat includes the entire extent of the floodplain and riparian areas of wetlands that are directly connected to stream courses. Criteria: High fish and wildlife density, high fish and wildlife species diversity, important fish and wildlife breeding habitat, important wildlife seasonal ranges, important fish and wildlife movement corridors, high vulnerability to habitat alteration, unique or dependent species.
Rural natural open space	priority species resides within or is adjacent to the open space and uses it for breeding or regular feeding; and/or the open space functions as a corridor connecting other <i>priority habitats</i> , especially areas that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and surrounded by agricultural developments. Local consideration may be given to open space areas smaller than 4 ha (10 acres).

	<p>Criteria: Comparatively high fish and wildlife density, high fish and wildlife species diversity, important fish and wildlife breeding habitat, important fish and wildlife seasonal ranges, important fish and wildlife movement corridors, high vulnerability to habitat alteration, unique species assemblages in agricultural areas.</p>
Shrub-steppe	<p>Large Tracts: Tracts of land >259 ha (640 ac) consisting of plant communities with one or more layers of perennial grasses and a conspicuous but discontinuous layer of shrubs. Large tracts of shrub-steppe contribute to the overall continuity of the habitat type throughout the region because they are relatively unfragmented, contain a substantial amount of interior habitat, and are in close proximity to other tracts of shrub-steppe. These tracts should contain a variety of habitat features (e.g., variety of topography, riparian areas, canyons, habitat edges, plant communities). Another important component is habitat quality based on the degree with which a tract resembles a site potential natural community, which may include factors such as soil condition and degree of erosion; and distribution, coverage, and vigor of native shrubs, forbs, grasses, and cryptogams.</p> <p>Small Tracts: Tracts of land <259 ha (640 ac) with a habitat type consisting of plant communities with one or more layers of perennial grasses and a conspicuous but discontinuous layer of shrubs. Although smaller in size and possibly more isolated from other tracts of shrub-steppe these areas are still important to shrub-steppe obligate and other state-listed wildlife species. Also, important are the variety of habitat features and habitat quality aspects as listed above.</p> <p>Criteria: Comparatively high fish and wildlife density and species diversity; important fish and wildlife breeding habitat and seasonal ranges, limited availability, high vulnerability to habitat alteration, unique and dependent species.</p>
Snags and logs	<p>Snags and logs occur within a variety of habitat types that support trees. Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of ≥ 51 cm (20 in) in western Washington and ≥ 30 cm (12 in) in eastern Washington, and are ≥ 2 m (6.5 ft) in height. Priority logs are ≥ 30 cm (12 in) in diameter at the largest end, and ≥ 6 m (20 ft) long. Abundant snags and logs can be found in old-growth and mature forests or unmanaged forests of any age, in damaged, burned, or diseased forests, and in riparian areas. Priority snag and log habitat includes individual snags and/or logs, or groups of snags and/or logs of exceptional value to wildlife due to their scarcity or location in a particular landscape. Areas with abundant, well distributed snags and logs are also considered priority snag and log habitat. Examples include large, sturdy snags adjacent to open water, remnant snags in developed or urbanized settings, and areas with a relatively high density of snags.</p> <p>Criteria: Comparatively high fish and wildlife density and species diversity, important fish and wildlife breeding habitat and seasonal ranges, limited availability, high vulnerability to habitat alteration, large number of cavity-dependent species.</p>

2.11 Fish And Wildlife

Biodiversity:

Biodiversity, multi-species management, and ecosystem wide approaches are currently being used to acquire and manage Department lands (declared by WDFW's Director Geoff Koenings, Habitat All-Hands Workshop, 04/05). These directives are critical to the Methow Valley and its rich biodiversity. Indicator species such as amphibians, songbirds, butterflies, and their associated habitats, as well as umbrella species such as mule deer, grizzly bears and beavers and their associated habitats and migratory routes, play an important role in management decisions for Department lands.

Due to the large landscape of the Methow Valley, the diverse habitat, and relatively intact watershed, wildlife species are diverse within the ecosystem. Species tracked by the Department that are known to occur on the Methow Wildlife Area and their conservation status are listed in Table 2. These lists are inclusive of the entire watershed, not specific to WDFW lands.

A diversity of mammal species includes mule deer and white-tailed deer, lynx, western gray squirrel, snowshoe hare and northern flying squirrels. The pallid bat and Townsend's big-eared bat extend their range up the Methow. Native shrub-steppe bird species range from blue grouse, to western and mountain bluebirds, to Lark and Brewers sparrows, and Loggerhead Shrikes. Montane and riparian forest songbirds include Northern orioles, yellow-bellied chats, and Lewis and white-headed woodpeckers. Plentiful forage encourages wintering bald eagles to roost in the Methow, and kettle



Townsend's Big-eared Bat



Basin Spadefoot Toads

ponds and riverine systems encourage breeding waterfowl, a great blue heron rookery, and golden eagle nesting. Reptiles and amphibians have scattered populations throughout the Methow, including Basin spadefoot toads, short-horned lizards, western rattlesnakes, western painted turtles, western yellow-bellied racers, and tiger salamanders. Endangered and threatened species of fish inhabit the rivers and streams, including Bull trout, spring Chinook salmon, and summer Steelhead.

Table 2. 2005 State and Federal Conservation Status and WDFW Priority Habitats and Species (PHS) criteria and priority areas for known wildlife species in the Methow watershed

(See internet sites <http://www.wdfw.wa.gov/wlm/diversity/soc/soc.htm>, <http://wdfw.wa.gov/hab/phsvert.htm>, and <http://www.wdfw.wa.gov/hab/phspage.htm>).

Common Name	Scientific Name	Type	Federal Status	State Status	PHS criteria	PHS priority area
Columbia spotted frog	<i>Rana luteiventris</i>	Am	FCo	SC	1	any occurrence
Tailed frog	<i>Ascaphus truei</i>	Am	FCo	-		
Tiger salamander	<i>Ambystoma tigrinum</i>	Am	-	SM		
Western toad	<i>Bufo boreas</i>	Am	FCo	SC	1	any occurrence
Bald eagle	<i>Haliaeetus leucocephalus</i>	Bi	FT	ST	1	Breeding areas, communal roosts, regular concentrations, perch trees in breeding areas
Barred owl	<i>Strix varia</i>	Bi	-	-		
Barrow's goldeneye	<i>Bucephala islandica</i>	Bi	-	-	3	breeding areas
Black-backed woodpecker	<i>Picoides arcticus</i>	Bi	-	SC	1	breeding areas, regular occurrences
Blue grouse	<i>Dendragapus obscurus</i>	Bi	-	-	3	Breeding areas, regular concentrations
Bufflehead	<i>Bucephala albeola</i>	Bi	-	-	3	breeding areas
Chukar	<i>Alectoris chukar</i>	Bi	-	-	3	Regular and regular large concentrations in WDFW's Primary Management Zones
Common goldeneye	<i>Bucephala clangula</i>	Bi	-	-	3	breeding areas
Golden eagle	<i>Aquila chrysaetos</i>	Bi	-	SC	1	Breeding and foraging areas
Gray flycatcher	<i>Empidonax wrightii</i>	Bi	-	SM		
Great blue herons	<i>Ardea herodias</i>	Bi	-	SM	2	breeding areas
Great gray owl	<i>Strix nebulosa</i>	Bi	-	SM		
Harlequin duck	<i>Histrionicus histrionicus</i>	Bi	-	-	2,3	regular concentrations
Hooded mergansers	<i>Lophodytes cucullatus</i>	Bi	-	-	3	breeding areas
Lewis' woodpecker	<i>Melanerpes lewis</i>	Bi	-	SC	1	breeding areas
Loggerhead shrike	<i>Lanius ludovicianus</i>	Bi	FCo	SC	1	regular occurrences and concentrations
Long-billed curlew	<i>Numenius americanus</i>	Bi	-	SM		
Merlin	<i>Falco columbarius</i>	Bi	-	SC	1	breeding sites
Northern goshawk	<i>Accipiter gentilis</i>	Bi	FCo	SC	1	Breeding areas, post-fledging foraging areas
Oregon vesper sparrow	<i>Poocetes gramineus affinis</i>	Bi	FCo	SC	1	any occurrence

Osprey	<i>Pandion haliaetus</i>	Bi	-	SM		
Pileated woodpecker	<i>Dryocopus pileatus</i>	Bi	-	SC	1	breeding areas
Prairie Falcon	<i>Falco mexicanus</i>	Bi	-	SM	3	breeding areas
Sandhill Crane	<i>Grus canadensis</i>	Bi	-	SE	1	breeding, regular occurrences, migration staging areas
Sharp-tailed grouse	<i>Tympanuchus phasianellus</i>	Bi	FCo	ST	1,3	Breeding areas, leks, regular and regular large concentrations, critical wintering habitat (riparian zones)
Spruce grouse	<i>Dendragapus canadensis</i>	Bi	-	-		
Three-toed woodpecker	<i>Picoides tridactylus</i>	Bi	-	SM		
Vaux's swifts	<i>Chaetura vauxi</i>	Bi	-	SC	1	breeding, communal roosts
waterfowl concentrations		Bi			3	Significant breeding areas and regular winter concentrations
Western bluebird	<i>Sialia mexicana</i>	Bi	-	SM		
White-headed woodpecker	<i>Picoides albolarvatus</i>	Bi	-	SC	1	breeding areas, regular occurrences
Wild turkeys	<i>Meleagris gallopavo</i>	Bi	-	-	3	regular concentrations and roosts
Bonneville skipper	<i>Ochlodes sylvanoides bonnevilla</i>	Bu	-	SM		
Freya's fritillary	<i>Boloria freija freija</i>	Bu	-	SM		
Thicket hairstreak	<i>Mitoura spinetorum spinetorum</i>	Bu	-	SM		
Bull trout (Columbia Basin)	<i>Salvelinus confluentus</i>	Fi	FT	SC	1,2,3	any occurrence
Chinook Salmon (Upper Columbia- spr)	<i>Onchorhynchus tshawytscha</i>	Fi	FE	SC	1,2,3	any occurrence
Steelhead (Upper Columbia)	<i>Onchorhynchus mykiss</i>	Fi	FE	SC	1,3	any occurrence
Big brown bat	<i>Eptesicus fuscus</i>	Ma	-	-	2	breeding and roosting concentrations
Bighorn sheep	<i>Ovis canadensis</i>	Ma	-	-	3	Breeding areas, regular concentrations
California myotis	<i>Myotis californicus</i>	Ma	-	-	2	breeding and roosting concentrations
Fringed myotis	<i>Myotis thysanodes</i>	Ma	FCo	SM	2	breeding and roosting concentrations
Gray wolf	<i>Canis lupus</i>	Ma	FT	SE	1	any occurrence
Grizzly bear	<i>Ursus arctos horribilis</i>	Ma	FT	SE	1	any occurrence
Little brown myotis	<i>Myotis lucifugus</i>	Ma	-	-	2	breeding and roosting concentrations
Long-eared myotis	<i>Myotis evotis</i>	Ma	FCo	SM	2	breeding and roosting concentrations
Long-legged myotis	<i>Myotis volans</i>	Ma	FCo	SM	2	breeding and roosting concentrations
Lynx	<i>Lynx canadensis</i>	Ma	FT	ST	1	any occurrence
Marten	<i>Martes americana</i>	Ma	-	-	3	regular occurrence
Mink	<i>Mustela vison</i>	Ma	-	-	3	regular occurrence
Moose	<i>Alces alces</i>	Ma	-	-	3	regular concentrations
Pallid bat	<i>Antrozous pallidus</i>	Ma	FCo	SC	2	breeding and roosting concentrations

Rocky Mountain mule deer	<i>Odocoileus hemionus hemionus</i>	Ma	-	-	3	Breeding areas, migration corridors, regular winter concentrations
Small-footed myotis	<i>Myotis ciliolabrum</i>	Ma	FCo	SM	2	breeding and roosting concentrations
Spotted bat	<i>Euderma maculatum</i>	Ma	-	SM		
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	Ma	FCo	SC	2	any occurrence
Western gray squirrel	<i>Sciurus griseus</i>	Ma	FCo	SC	1	any occurrence
Wolverine	<i>Gulo gulo</i>	Ma	FCo	SC	1	any occurrence

Wildlife:

The original Methow Wildlife Areas were purchased and managed primarily for mule deer and upland bird species since the 1950's. Pheasants were released in many parts of Okanogan County and a limited number of brood stock pheasants (usually less than 60, but at times as many as 300) were released on Department land in the Methow each year. Success was limited because the birds moved to lower elevation farming areas and river bottoms, and there was considerable expense in raising and transporting birds. Furthermore, severe winters such as that in 1968 (-40 degree temperatures and 4-5 feet of snow) devastated upland birds in the valley, and it was nearly 10 years before regular sightings of upland birds were noted again.

Today, upland birds such as 3 species of grouse (blue, ruffed and spruce), hungarian partridge, California quail, and wild turkeys are species present on Department lands in the Methow. Native grouse populations are doing well in their associated habitats, except for sharp-tailed grouse, which historically inhabited the shrub-steppe landscape. Their lekking grounds have not been active since the 1980's, however current shrub-steppe acquisitions and management of shrub steppe and shrubby draw areas are focused on future sharp-tail grouse habitat and potential reintroduction sites.

The Methow Valley is known in Washington State for it's wintering mule deer herd, and hence it's incredible population numbers, which were estimated at 25,000 individuals in the mid 1990s (Myers et al. 1990), and on the upwards of 47,000 individuals from hunter harvest records in 1968 (Myers et al. 1990). However, populations were not always been this robust. Mule deer numbers were extremely low in the Methow during the turn of the century, potentially due to severe winters and human settlement. In fact, a 1911 Forest Service winter report estimated that there were less than 50 deer in the lower Methow. Mule deer have rebounded since this time, partly due to the Department's initiative to acquire and protect bitterbrush dominated shrub-steppe habitat and migratory routes, and partly due to fire suppression as well as cattle grazing, which encouraged shrub growth throughout the uplands.

Other mammal species common in the Methow include: white tailed deer, cougar, coyotes, yellow-bellied marmots, short- and long-tailed weasels, bats of various species and bobcats. Skunks and badgers once plentiful in the valley have all but disappeared, with only a few badger sightings recorded in the last 5 years. Bird species commonly seen on Department lands include: bald and golden eagles, red-tailed hawks, great horned owls, sapsucker and woodpecker species, as well as a host of migratory neotropical songbirds. Several orders of wildlife have not been surveyed on Department lands in the Methow, however USFS and local



Taylor's Checkerspot Butterfly

interest group surveys for T&E species are ongoing. These include mollusks, bivalves, arthropods and butterflies.

Fisheries:

Upper Columbia River summer steelhead, including the Methow River run, were listed under the Endangered Species Act (ESA) as “endangered” in 1997. Upper Columbia River spring-run Chinook salmon, including the Methow River run, were listed under the ESA as “endangered” in 1999. Bull trout in the Methow River were listed under the ESA as “threatened” in 1998. All of these ESA listed species inhabit the Methow watershed and have experienced a severe decline in adult numbers. Although not an ESA listed species, summer-run Chinook that spawn and rear in the Methow River, declined dramatically between 1967 and 1991 (WDFW 1993). Based on a short-term severe decline and a long-term negative trend in escapement summer-run Chinook are identified as “depressed” by the Washington Department of Fish and Wildlife (Andonaegui 2000), although recent survey data indicates the stock numbers are increasing (WDFW 2003). All of these species are important ecologically, culturally, and economically to the Methow Watershed.

Despite ongoing hatchery programs, resource managers have not been able to reestablish the salmon and steelhead populations to self-sustaining levels. Failure can be attributed to a number of factors including: passage problems and mortality associated with 9 hydroelectric facilities on the mainstem Columbia River, unfavorable ocean conditions, harvest pressures, and degradation habitat within the Upper Columbia River watersheds (WDFW et al. 1990; Peven 1992; Caldwell and Catterson 1992; WDFW 1993; Williams et al. 1996). The most common limiting factors within the Methow Watershed are habitat diversity, sediment load, and quantity of key habitats for various life stages (Ken Williams, pers. comm.).

Current anadromous fish bearing streams in the Methow Wildlife Areas include: Beaver Creek and the Chewuch River within the Methow W.A., and the Methow River within the Golden Doe W.A., Texas Creek W.A., and the Big Valley W.A. These rivers and associated tributaries have experienced more restrictive fishing and water withdrawal regulations in recent years for protecting endangered anadromous species. Historically, tributary streams in the Methow Wildlife Area such as Bear Creek, Pearrygin Creek, and Ramsey Creek very likely supported steelhead, coho and chinook spawning and/or rearing. Habitat alterations downstream of the Methow Wildlife Area have blocked anadromous access into the upper sections of these streams (Gower et al. 2001).

There are many lakes, streams and rivers that are open for fishing activities throughout the year. These include: Sullivan Pond, Cougar Lake, Campbell Lake, Bear Creek, Beaver Creek, the Chewuch River, and Ramsey Creek (Methow W.A.); two impoundments Aspen Lake and Shaw Lake (Big Buck W.A.); the Methow River (Golden Doe W.A., Texas Creek W.A. and Big Valley W.A.); and Alder Creek (Golden Doe W.A.). These waters normally provide excellent and diverse fishing. However, due to drought conditions and low water, some of these fisheries are not as productive as in recent years.

Cougar and Campbell Lakes: These waters open on September 1, and remain open through March. Campbell Lake is also open for catch and release fishing from April 1 through August 31. Rainbow trout (6-8”), reared at Wells Hatchery, are planted as soon as possible after ice out. Good fishing is available before ice-up, and winter ice fishing can be equally good during certain years. Both lakes suffer winter-kill periodically, a fact that can limit management possibilities. Although

the fishery in these lakes remains viable, both of these lakes are suffering from the effects of the prolonged drought in the Methow.

Sullivan Pond: The fishery in Sullivan Pond came to an end in 1990 due to drought conditions. The water level was quite low in the fall of 1990 and by August 1991, the pond had dried up. There was no water in Sullivan pond the spring of 2005.

Bear, Beaver, and Ramsey Creeks: These small creeks offer limited fishing. Bear Creek and Ramsey Creek offer fishing confined primarily to a series of beaver ponds. Beaver Creek has a self-sustaining population of rainbow trout that offers the best fishing below the confluence of the South Fork of Beaver Creek and Lightening Creek. USFS enhancement work removed human-made fish barriers on the lower end of Beaver Creek in 2004/05 has led to increased migration of Bull trout and steelhead among others species to suitable spawning grounds upstream. In the future, special regulations may be instituted on Beaver Creek to protect juvenile steelhead rearing in the upper reaches of the watershed.

Big Buck Lakes: Aspen Lake on the Big Buck has been planted several times with eastern brook trout. Shaw lake near the Prewitt Ranch buildings, a spiny ray fishery with bass was tried in the mid-1980's, but drought conditions in the early 1990's severely lowered water levels and killed all fish. Whenever there is sufficient spring water, Shaw Lake is stocked with rainbows for a put-and-take fishery. Deadhorse Lake on the east side of the unit does not contain fish.

Big Valley Ponds: The brook trout population in the spring fed artificial pond is not native and therefore merits little concern for conservation, other than providing recreation. This pond is half on private property and half on WDFW, and access is limited. However, the springs play an important role in salmon/steelhead production downstream by cooling summer water temperatures and warming winter water temperatures, providing excellent rearing and over-wintering habitat for smolts.

Methow and Chewuch Rivers: Spring Chinook and steelhead are classified as endangered in these two waters. Fishing regulations are quite restrictive and users need to check regulations seasonally.

Alder Creek: Alder Creek is not currently stocked.

Fisheries Projects:

Fish Passage: In 1999 and 2000, an inventory of all fish passage barriers was done on the Methow. Thirteen fish passage problem areas (primarily culverts) were found on Department lands. In 2002, engineering firm Northwest Hydraulic Consultants was hired to engineer "fish friendly" replacements for these structures. Culvert replacement projects are being planned for road crossings on Beaver and Bear Creeks.

Fish Screening on Irrigation Diversions: As a result of the above noted fish passage inventory, fish screens were installed at 3 irrigation water diversions on the wildlife area, The screened diversions are located on Beaver Creek, Frazer Creek, and Bear Creek. The fish screen on the Rockview Ditch on the Big Valley W.A. was declared inadequate and was scheduled for replacement in 2002. However, because the screen was 1700 feet from the ditch inlet, and the outlet (approx. ½ mile) from the screen presented problems for fish returning to the Methow River,

the ditch was shut down after the irrigation season in 2001. WDFW partnered with the Upper Columbia Regional Fisheries Enhancement Group (RFEG) and received a grant from the Salmon Recovery Funding (SRF) Board to install an irrigation well in 2005. There are project ideas about reconnecting side channel areas along the Methow for rearing juvenile steelhead and spring Chinook, which may utilize the Rockview side channel.

Pearrygin Creek diversion for irrigation to a new WDFW acquisition (Lloyd Ranch) is in need of fish screen replacement, slated for 2006 (pending funding). The Lloyd Ranch acquisition brings most of the Pearrygin Creek watershed into WDFW and USFS ownership, such that if fish passage barriers downstream of Pearrygin Lake were to be corrected, significant high quality habitat could be restored for anadromous fish originating from the Chewuch River. Juvenile Chinook and Coho salmon have been confirmed present in lower Pearrygin Creek (Uber, pers. comm. 2002)

2.12 Programs And Projects

Ponderosa Pine Management:

Thinning of ponderosa pine in the Pearrygin Creek, and Frazer Creek areas was started in 1955 and continued every winter until 1963. A WDFW habitat crew worked on the thinning project during the winters thinning, piling and burning nearly 400 acres. Tree spacing plots were established, and many stand improvement studies have been done over the last 50 years (Barrett 1965, Barrett 1968, McConnell and Smith 1968, McConnell and Smith 1970, Cochran and Barrett 1998). Results of these studies have been used throughout the west to improve ponderosa pine management techniques.

In 1973, Chuck McComb and Gordon LaVoy set up a timber sale on this area to thin the fastest growing trees. Two hundred thousand board feet of merchantable timber was removed and taken to the mill. An additional 1200 unmerchantable trees were cut and left to decay for wildlife habitat.

A portion of this thinning research area burned in the Pearrygin Creek Wildfire in early summer 2005. Ongoing research is being done by Oregon State University, Corvallis, and USFS Methow Ranger Station to identify the survivorship of trees post-fire and sub-canopy vegetation re-growth. Native grass reseeding of firelines and “hotspots” took place in fall 2005.

Grazing and Sharecropper Leases:

The importance of open space, wildlife habitat, and the pastoral nature of the Methow resonate among most people in the Methow, including the Methow Citizen’s Advisory Group (CAG). Grazing has been used as a tool for vegetation manipulation since the early 1970’s on the MWA. Agriculture in the way of hay production has been implemented on the MWA to provide forage for wildlife, business for local agriculturalists, and to prevent noxious weed infestations.

Water Impoundments:

There were two water impoundments constructed for waterfowl (Walt Bens, yearly reports) on the Methow state lands. The first, constructed in 1957, is about three acres in size, located on Vanderpool Hill (T35N, R21EWM, Sec. 11) near Sullivan Pond. The second is located to the northwest of the Campbell Lake/Beaver Creek junction (T34N, R22E, Sec.10). There has been limited water in both impoundments since the mid-1970.

Prior to Department acquisition, a dam was constructed on Sullivan Pond (T35N, R21EWM, Sec. 12). Water from Ramsey Creek was diverted approximately 1¼ mile into the pond, which was used for irrigation on the John Jones farm below Sullivan pond.

There are two water impoundments on the Big Buck W.A. The upper impoundment at Aspen Lake (T34N, R21EWM, Sec.33) was constructed in the 1940's and was re-constructed in 2005. Shaw Lake (T33N, R21EWM, Sec. 2) had a dam constructed on it prior to Department acquisition. In 1988, Department engineers constructed a rock spillway to facilitate overflow and keep the dam from washing out. Both lakes are used for irrigation and fisheries remain viable when water levels are sufficient.

Campbell Lake (T34N, R22EWM, Sec. 15) is partially impounded by a dam about 3 feet high. This structure has not supported water since the mid-1990 due to drought conditions.

Cistern Guzzlers:

There are 5 cistern guzzlers on the Methow. Three are located in Elbow Coulee on the Big Buck W.A., and two are located on the Methow Wildlife Unit.

Weed Control Program:

Noxious weeds were documented and attempted to control as early as the 1950's and 1960's on the Methow Wildlife Areas. These weeds included diffuse knapweed (*Centaurea diffusa*), whitetop (*Cardaria draba*), Russian knapweed (*Centaurea repens*), and Canada thistle (*Cirsium arvense*). At that time, chemicals were not readily available for use and results were poor. Between 1969 and 1983 chemicals were used mostly for spot spraying, and in 1984, a spray program began primarily to control diffuse knapweed on roadsides and in parking lots. About one-third of the roads on the wildlife area were sprayed each year. The amount of rangeland sprayed for chemical control of noxious weeds has varied between 50-300 acres each year since the mid 1980's.

The number of weed species of concern has also increased over the years. Besides those noted above, control work has been done on Dalmatian toadflax (*Linaria dalmatica ssp.*), hounds tongue (*Cynoglossum officinale*), oxeye daisy (*Chrysanthemum leucanthemum*), field bindweed (*Convolvulus arvensis*), common tansy (*Tanacetum vulgare*), and Kochia (*Kochia scoparia*). At the present time, hounds tongue is found on the Rendezvous and Texas Creek W.A. Whitetop is found on all wildlife areas, but is especially problematic in the Rendezvous and Big Buck Wildlife Areas. Oxeye daisy and Canada thistle are found on the Big Valley W.A. Common tansy is found primarily on the Big Valley W.A., but scattered patches have also been found on the Chewuch River, and on the Methow W.A. Dalmation toadflax can be found on several wildlife areas. It is apparently spread by deer, and has been found in native shrub-steppe as well as disturbed areas, making it difficult to eradicate.

Integrated pest management (IPM) is a way of controlling non-native weeds using natural, biological, cultural and chemical methods. To moderate the chemicals used on our public lands, a biological control program was started on diffuse knapweed in the mid-1980. Several insects have been used since 2002, and since this time, no chemical controls have been used on this weed. Biological controls used on knapweed include two seed head flies, *Urophora affinis* and *Urophora quadrifasciata*; a seed eating moth, *Metzneria paucipunctella*; and a seed eating beetle, *Larinus minutus*. It appeared to be disappearing rapidly, and in 2004, diffuse knapweed was diminished

completely in some areas. Currently, in 2005, the seed source still prevalent in the soils is booming potentially due to a decline in the biocontrols from lack of food the previous year, and/or the moist fall 2004/ spring in 2005.

Biological control on Dalmation toadflax was started in 2002, using a forage feeding/stem-boring beetle, *Mecinus janthinus*. WDFW managers released this beetle again in 2004 and 2005. Another seed-feeding beetle, *Brachypterolus pulicarius*, will also be released when supply is available. Two biological controls, *Rhinocyllus conicus* & *Larinus planus* were also released on the Big Valley W.A. to control Canada thistle.

Cultural methods such as farming, mowing, plowing, and reseeding are also being used to help control and outcompete noxious weeds on the wildlife areas. Several experimental plots on the Rendezvous W.A. were implemented in 2005 to control white top and other non-native weeds that had infested the area (see weed management plan).

Road Maintenance and Abandonment (RMAP):

In 2003, all roads on the area were mapped using GPS equipment. Maps of all of these roads were produced and “at risk” areas were noted. Improvements will be made to these areas over time.

Americans With Disabilities (ADA) Hunting Program:

In 1998, the Department in cooperation with the Dept. of Agriculture U.S. Forest Service (USFS), Okanogan National Forest, opened the Bear Mountain Loop area (any motorized vehicles allowed) to ADA hunters, which is normally closed to motorized vehicles during hunting season. The WDFW concurrently opened land to ADA hunting in the Rendezvous Unit to ATV access only. An additional area is expected to open in 2006 to accommodate increased interest and demand. The Methow Wildlife Area Manager administers this program, and ADA hunters interested are recommended to contact the manager prior to hunting season to sign up for the first-come first-serve days available during hunting season.

2.13 User Groups And Recreational Use

Prior to the opening of the North Cascades Highway (SR 20) in the fall of 1972, the majority of public use in the Methow was hunting and fishing. At about the time the highway opened, the Aspen Corporation explored the possibility of building a large destination resort in the upper valley. The resort was challenged by local citizens and did not come to be, however a community trail system was put into place and Sun Mountain Lodge was erected as a destination resort.

The demographics of the valley have changed considerably in the last 30 years, and the valley is now known as an environmentally friendly destination for recreation. While the participation in hunting has remained steady over the last 10 years (around 15,000 hunters in Okanogan County), the more significant change has been the increased number of watchable wildlife related recreationalists to the Methow Valley. Currently, over 60% of property owners in the Methow are second homeowners (Hover, pers. comm. 2005) which translates to increased recreational activities on all public lands. Recreational pursuits include cross-country skiing, snowshoeing and snowmobiling in the winter, and hiking, mountain biking and horseback riding in the spring, summer and fall. Several pamphlets or books are distributed or for sale at local stores that highlight recreational use on user-built trail systems on the MWA (Barnet 2001, MVBCHA and MVSTA 2004).

CHAPTER III. MANAGEMENT OBJECTIVES, ISSUES & STRATEGIES

Statewide goals and objectives listed in chapter one shape management priorities on wildlife areas. Specific wildlife area information including why the area was purchased, habitat conditions, species present, and public issues and concerns are evaluated to identify wildlife area activities or strategies. Public issues from past planning efforts and the Citizens Advisory Group are noted in italics and are captured in Appendix 1

Objectives and associated strategies or tasks specific to the Methow Wildlife Area (MWA) are listed where appropriate and prioritized under applicable agency objectives. Unfunded needs are underlined.

Agency Objective: Protect, Restore & Enhance Fish and Wildlife and Their Habitats

1. Maintain big game populations

Mule Deer

The Methow Valley supports the largest mule deer herd in Washington State during the winter months. WDFW's acquisition program has used P-R, IAC, and WWRP funds to purchase mule deer winter range and fall/.spring migratory corridors throughout the shrub-steppe foothills of the Methow Valley from the 1960's to the present. These acquisitions have successfully protected thousands of acres of critical shrub-steppe habitat from human development.

Well-managed livestock grazing on Department land in the MWA has been used as a tool to decrease competition of bunchgrasses and increase growth, vigor, and regeneration of bitterbrush. These practices are thought to increase forage quality for mule deer throughout the winter range. *Public concerns include resident mule deer in valley bottom and depredation problems associated with deer in alfalfa fields/haystacks; lack of irrigated and productive historic fallowed fields on Department land which would attract deer off of private lands and onto WDFW land; grazing issues (see shrub-steppe management strategies). Deer mortality on highways between Twisp and Winthrop, and Winthrop to Mazama.*

The Game Management Plan Statewide Goals for deer management calls for:

1. Preserve, protect, perpetuate, and manage deer and their habitat to ensure healthy, productive populations.
2. Manage deer for a variety of recreational, educational and aesthetic purposes including hunting, scientific study, cultural and ceremonial uses by Native Americans, wildlife viewing and photography.
3. Manage statewide deer populations for a sustainable annual harvest."

Additionally Objective 57 under Mule deer management states:

"Try to maintain or enhance mule deer habitat including forage and security cover. Direct the Department's focus toward mule deer habitat improvement and protection."

And the Strategies under Objective 57 are listed as:

- a. Acquire critical mule deer habitat or conservation easements on critical mule deer habitat.
- b. Work with state, federal, and private land managers to conduct prescribed burns that will benefit mule deer.

- c. Work with county government growth management planners to limit the expansion of human development on mule deer range.”
- d. Work with the Mule Deer Foundation to conduct projects that improve winter range for mule deer (WDFW 2003).

A. Strategy: Work with adjacent landowners and other landowners to acquire conservation easements or acquisition of property to provide long-term protection of mule deer winter range and migratory corridors. Timeframe: Ongoing.

B. Strategy: Explore opportunities with WDFW district biologist to reduce numbers of resident mule deer along highways and within valley bottom. Timeframe: Annual and whenever needed.

C. Strategy: Use well managed livestock grazing treatments where appropriate as a tool to improve or maintain habitat for mule deer.

D. Strategy: Maintain irrigated agriculture in grains, grasses and forbs to provide winter and spring forage for deer, upland birds, and a variety of wildlife species. Action: Big Valley north (160 ac), ag lease for 2006-2011; develop Big Valley south (approx 80 ac), 2006 for ag lease in 2007; Lloyd Ranch, Ramsey Crk Rd (60 ac), ag lease for 2006-2011; Methow Unit- Bally Hill Rd. (60 ac), ag lease for 2006-2011; Patterson/ Beaver Crk (approx 40 ac), 2006 for ag lease in 2007; and Texas Creek Unit (150 ac), 2006 for ag lease in 2007.

E. Strategy: Permit light late summer domestic livestock grazing to remove dead grass material and stimulate new growth spring deer forage. Action: 1600 acres on Big Buck Unit, 1150 acres on Little Cub Creek, and 340 acres on Lloyd Ranch until further management plans developed. Timeframe: Ongoing.

F. Strategy: Permit light spring domestic livestock grazing prior to boot stage of grass production to increase forage quality. Special attention will be paid to maximize seed production of native grass and forb species, and minimize the spread of noxious weeds. Action: approx 1200 acres on Big Buck Unit, 1370 acres on Fraser Creek, 3600 acres on Beaver/Bowen/Fraser/Ramsey, and 460 acres Ramsey Creek. Timeframe: Ongoing.

G. Strategy: Work with private, county, state and federal land managers to promote use of prescribed fire, in a coordinated effort on all lands, to enhance or maintain mule deer habitat.

H. Strategy: Assess timber thinning to evaluate potential benefits to mule deer habitat enhancement.

I. Strategy: Conduct condition assessments of landscape for mule deer habitat using historic and current deer presence.

Black Bear

Black bear are present on and adjacent to the MWA in decent numbers. Visitors to the MWA often see black bear on the open shrub-steppe slopes during the early spring, foraging for emergent grasses and forbs. Visitors can occasionally see black bears when camping, hiking or driving through the MWA, and hunters come to the MWA specifically to hunt black bear.

The Game Management Plan Statewide Goals for black bear management call for:

1. Preserve, protect, perpetuate, and manage black bear and their habitats to ensure healthy, productive populations.

2. Minimize threats to public safety and property damage from black bears, while at the same time maintaining a sustainable and viable bear population.
3. Manage black bear for a variety of recreational, educational and aesthetic purposes including hunting, scientific study, cultural and ceremonial uses by Native Americans, wildlife viewing and photography.
4. Manage statewide black bear populations for a sustained yield.

Habitat Management Issue Statement: Black bear distribution and habitat use are influenced by a variety of environmental and human factors. It's important to understand and predict how these factors influence bears to better manage bear populations for sustainable harvest, as well as minimizing negative human-bear interactions.

Objective 96 under black bear management states: Develop a document and map identifying core habitat areas for black bears.

The strategies under Objective 96 are listed as:

- a. Delineate core habitat areas for black bears using regional staff expertise.
- b. Expand habitat preference results from 2001 black bear study final report to entire state.
- c. Work cooperatively with state, federal, tribal, and private entities to develop relative habitat use probability model for black bears (WDFW 2003).

A. Strategy: Assist in efforts to delineate core black bear habitat on and adjacent to the MWA.

B. Strategy: Start thinking about sanitation issues on MWA, and informing public of these issues. Eventual education signs at strategic locations throughout the MWA to make people aware they are in bear country.

Cougar

The MWA is home to a number of cougars. Cliffs and rocky terrain are a favored habitat providing hunting and escape cover, while their primary prey (mule deer) exist in large numbers on the MWA. Cougars are not commonly seen on the MWA, but their numbers and presence are apparent by tracks after a snowfall in the winter, and by the occasional sighting near homes within their preferred habitat. Folks who do get an occasional observation of a cougar are quick to share their observations.

The Game Management Plan Statewide Goals for cougar management call for:

1. Preserve, protect, perpetuate, and manage cougar and their habitats to ensure healthy, productive populations.
2. Minimize threats to public safety and private property from cougars.
3. Manage cougar for a variety of recreational, educational and aesthetic purposes including hunting, scientific study, cultural and ceremonial uses by Native Americans, wildlife viewing and photography.
4. Manage statewide cougar populations for a sustained yield.

Habitat Management Issue Statement:

The density of cougars is not uniform across the landscape. Cougar densities likely vary based on prey abundance, vegetation conditions, human disturbances, and other factors that influence cougar habitat. To properly manage cougar populations (e.g., harvest,

public safety), it's important to identify core and peripheral habitats so management decisions can be adjusted accordingly.

Objective 106 under cougar management states:

"Develop a map identifying core habitat areas for cougar.

The strategies under Objective 106 are listed as:

- a. Conduct literature review on cougar habitat requirements.
- b. Identify distributions of important prey species.
- c. Develop a model identifying relative habitat suitability for cougar.
- d. Incorporate data from past and current studies.
- e. Identify habitats secured for prey species that also benefit cougar populations (WDFW 2003).

A. Strategy: Identify and protect habitats outside of developed areas secured for prey species that also benefit cougar populations. Timeframe: Ongoing.

2. Manage for species diversity

Develop and maintain quality habitat that will provide life requisites for a diversity of species. Nearly all activities on the wildlife area benefit a diversity of species.

Public comments included the fact that there is not just "game spp" on our wildlife area. Another comment addressed the fact that the Game Dept is drawing attention away from its prime mission (providing mule deer habitat) and focusing too much on biodiversity. What about plants- they are wildlife/ diversity too!

A. Strategy: Determine species use and need by performing surveys for breeding birds, reptile and amphibians, and mammal species. Cooperate with agencies and local groups to acquire information on wildlife use of the area. Action: partnership with WA State Parks, Methow Conservancy, and local volunteers to conduct breeding amphibian surveys. Spring 2006 pilot project, and ALEA volunteer grant for 2007-2010 surveys.

B. Strategy: Survey, inventory, map and manage for rare plant populations that currently exist on the MWA. Cooperate with agencies and local groups to acquire information on these plants and vegetative communities. Action: Work with WA State Parks and Pacific Biodiversity Institute to conduct rare plant and vegetation community surveys on 2000 acres of the MWA adjacent to Pearrygin State Park- spring 2006.

C. Strategy: Create a mosaic of habitat within the watershed to host a variety of native species. For example within shrub-steppe habitat, manage for bunchgrass communities as well as shrub dominated communities to provide habitat to a diversity of wildlife species. Timeframe: Ongoing.

D. Strategy: Protect riparian corridors and kettle ponds/lakes from adverse impacts (humans, deer, cattle) to increase aquatic and riparian associated species. Action: maintain and construct fencing around Riser Lake and Deadhorse Lake riparian area in fall 2005 / spring 2006. Timeframe: Ongoing maintenance.

E. Strategy: Develop informational GIS map of species diversity for plants and animals to effectively manage for each species, to identify habitat and corridor potential, and to develop a brochure for those interested in watchable wildlife. Timeframe: Ongoing.

F. Strategy: Educate people about the importance of riparian corridors, riverine habitat, and kettle ponds/lakes and potential negative human impacts. Action: work

with USFS Respect the River program to develop and setup informational signs.
Action: Partner with MVSTA and Watchable Wildlife Grant Program to make and install interpretive signs on the WDFW Big Valley trail and Luna Chick winter ski trail. Timeframe: Winter-fall 2006.

G. Strategy: Assess and conduct prescribed burn projects to reduce potential insect and catastrophic fire danger and create forest conditions more suitable to species diversity.

3. Improve and maintain fish populations

Portions of the MWA were purchased to provide and protect spawning , rearing and migration habitat for endangered fish such as summer steelhead and spring Chinook, and threatened bull trout. These species are all considered important culturally, ecologically and economically to the Methow watershed. These three species are present (or were historically present) year round throughout the watershed in one life stage or another. It is assumed that other aquatic life will benefit from managing toward suitable conditions for these species, due to their wide range of habitat requisites (Andonaegui 2000). The most common limiting factors for both summer steelhead and spring Chinook are habitat diversity, sediment load, and quantity of key habitats for various life stages.

Public concerns include lack of communication with fisheries entities regarding detrimental effects to native populations of fish (i.e. collecting spawning spr-Chinook on the Twisp and Chewuck Rivers for hatchery stock). Use of WDFW land and WDFW CE land to conduct such operations.

A. Strategy: In areas subject to grazing by domestic stock, permitted or trespass, fence riparian habitat and all impoundments to protect from unmanaged grazing impacts. AND/OR explore other opportunities to manage livestock and their effects on riparian habitat. Timeframe: Ongoing.

B. Strategy: Work with fish and habitat biologists to identify habitat improvement or maintenance activities that would benefit endangered and threatened fish species on the MWA. Action: Chewuch/Boulder Creek dam renovation and riparian restoration finish by fall 2006; Work under RMAP to close detrimental roads in Cub Creek area. Timeframe: Annual.

C. Strategy: Maintain current habitat conditions to sustain existing fish populations and provide fishing opportunities. i.e., continue to operate water control structures to provide habitat; protect and enhance all WDFW (ownership and CE) riparian areas along streams and waterways. Timeframe: Annually.

4. Manage for upland birds

Large portions of the MWA were purchased to provide habitat for mule deer and blue grouse. Two species of forest grouse are found in abundance on the MWA including ruffed grouse and blue grouse. In the past, pheasant, chukar, Hungarian partridge, and California quail were introduced onto the landscape and managed intensively. Over the last 10 years, emphasis on the MWA has been on natural populations and production of upland birds. An exception is California quail who are still transported to help recolonize new areas. This practice will be evaluated in the near future to evaluate the effects on potential Sharp-tailed grouse habitat. Forest grouse and upland game bird hunting and viewing opportunities provide a recreational activity on the MWA. These activities are permitted as long as impacts to native wildlife species are not compromised. *Public*

comments include: Restoration of sharp-tailed grouse- grain influenced their habitat in the 1920-1940's (suspected they utilized these areas for forage). Loss of habitat from development and lack of winter forage (water birch).

A. Strategy: Prioritize and restore historic agriculture fields to native grasses and forb cover to limit weed dispersion, decrease management over time, and provide native habitat for wildlife forage and cover. See Agency objective: Protect, Restore & Enhance Fish and Wildlife and Their Habitats. Sub-objective 6.

B. Strategy: Maintain irrigated and non-irrigated agriculture in grains, grasses and forbs to provide winter and spring forage for upland birds, deer, and a variety of wildlife species. See Agency Objective Protect, Restore & Enhance Fish and Wildlife and Their Habitats. Sub-objective 1

C. Strategy: Plant water birch to enhance Sharp-tailed grouse winter forage along areas designated as potential Sharp-tailed grouse habitat. E.g. Balky Hill area.

D. Strategy: Evaluate habitat potential for sharp-tailed grouse habitat and re-introduction. Action: Look into graduate student project.

5. Protect and manage other species

More than 80 species of birds, mammals, reptiles and amphibians use living trees in the decaying process, or standing dead trees also called snags (Bull et al. 1997). Wildlife species depend on these trees for nesting, roosting, denning, foraging, resting or shelter. Primary cavity nesters such as woodpeckers and nuthatches excavate cavities in snags, while secondary cavity nesters only use existing cavities for nesting denning or shelter. The space behind loose bark on snags also provides nest and roost sites for birds and bats. *Public comments include: Mandate for good science- restoration and monitoring. Need to balance science with economy.*

A. Strategy: Protect nesting and foraging habitat for several woodpecker and cavity nesting species. Protect and create snags. Many cavity nesting forest birds depend on the primary cavity excavators. Many, like the white headed woodpecker and Lewis's woodpecker, depend on large diameter snags for foraging and nesting. Action: Maintain habitat for cavity nesting birds and high quality forage in the recent Pearrygin Creek burn area. Timeframe: Ongoing

B. Strategy: Inventory and protect amphibians and wetland habitats. Action: 2006 work with local partners and volunteers (ALEA grant) to establish long-term amphibian surveys on the MWA. See Agency Objective: Protect, Restore & Enhance Fish and Wildlife and Their Habitats. Sub-objective 2.

C. Strategy: Work with local biologists and student interns to inventory and map species of significance on the MWA (both vegetation and wildlife) and develop management plans to protect them.

D. Strategy: Protect large roost trees and areas that may be used by wintering bald eagles, particularly on the Methow River. Action: Continue to perform winter roost surveys on WDFW land along Methow River. Timeframe: Annually-Winter season.

E. Strategy: Maintain and expand bluebird, bat, and wood duck nest box placement on all units. Work with local naturalist Dana Visali to encourage his continued surveys and maintenance of bluebird nest boxes on the MWA.

F. Strategy: Work with local citizens and agencies on beaver restoration program to benefit wetlands and associated wildlife species. Action: establish 1 beaver family

in an appropriate area on WDFW land to assist with wetlands restoration efforts. Monitor the effects over time.

G. Strategy: Protect and preserve cryptogammic soils. These have been disrupted by overgrazing and may have a role in noxious weed prevention

H. Strategy: Determine presence/absence and role of cryptic species such as mollusks, butterflies, and rare or unique plants.

I. See Agency Objective: Protect, Restore & Enhance Fish and Wildlife and Their Habitats. Sub-objective 3, to address priority fish species.

6. Protect and restore shrub steppe habitat

The Department has identified shrub-steppe habitat as a Priority Habitat for state protection and management due to its comparatively high fish and wildlife density and species diversity, important fish and wildlife breeding habitat and seasonal ranges, limited availability, high vulnerability to habitat alteration, and unique and dependent species (see Table 1). Shrub-steppe ecosystems are also listed as a priority habitat in the Okanogan Ecoregional Assessment (Okanogan 2005). A mosaic of shrub or grass-dominated vegetation within shrub steppe provide habitat for a diversity of fish and wildlife species and for comparatively high densities of animals.

This landscape is extremely vulnerable to habitat conversion and alteration practices. The major factors affecting loss of shrub-steppe in the Methow include: human development by means of road construction, dispersed residential development, reduced wildlife access to natural water bodies, and changes to vegetative communities; agriculture, where crop production reduced native habitat diversity, soil disturbance, which led to nutrient imbalances and topsoil erosion, and abandoned fields which led to exotic species invasion; and poorly managed domestic livestock grazing (sheep, horses, cattle) has proliferated annual grasses and noxious weeds which altered native bunchgrass communities and sensitive riparian ecosystems.

Public comments that shrub-steppe conservation is as important as forested habitat. Is it possible for the CAG to set a goal of “no net loss” of ecological condition of shrub steppe?

A Strategy: Protect existing habitat in good condition and habitat corridors and linkages through easements and acquisition. Timeframe: Ongoing.

B. Strategy: Work with local organizations to inventory, survey, and map the MWA for noxious weed infestations, and plant species diversity.

C. Strategy: Utilize Integrated Pest Management (IPM) techniques as much as possible on weed infestations on around MWA. Prioritize and treat satellite populations of weeds on intact shrub-steppe landscape. Timeframe: Ongoing.

D. Strategy: Restoration of historic agricultural fields to viable shrubland functionality through reestablishment of native plant communities. Keep a program of at least 100 acres per year in a restoration program, converting fields of non-native vegetation to native shrub-steppe including grasses, forbs and shrubs. Action: Riser Lake (20 acres) and Pearrygin Burn area (30 acres), IAC-SLR grant (application due in May 2006). Priority areas in Methow Unit 2006-2008 include: South and North ends of Pipestone Canyon, HQ offices and Pearrygin Flats, and Sullivan’s Pond/Ramsey Creek Flats. Priority areas 2008-2010 include: Big Buck, Golden Doe, and Little Cub Creek.

E. Strategy: Minimize adverse livestock grazing impacts on habitat and wildlife and provide grazing opportunities that benefit fish and wildlife habitat. Action: work with grazing permittees to maximize potential wildlife habitat protection, streamline water use, and provide grazing opportunities that benefit fish and wildlife.

Timeframe: Ongoing.

F. Strategy: Perform 10 new long-term monitoring shrub steppe condition surveys per year to assess habitat quality and trends over time. Timeframe: Annual.

G. Strategy: Collect seeds of native plant species from the Methow watershed and have them commercially grown to provide larger quantities for shrub-steppe restoration purposes. Action: work with local Outward Bound volunteer/community outreach students. Timeframe: Annual.

H. Strategy: Evaluate and use prescribed fires on all areas where appropriate to rejuvenate and improve shrub-steppe habitat and reduce the risk of catastrophic fires.

I. See Agency Objective Ensure WDFW Activities, Programs, Facilities and Lands are Consistent With Local, State and Federal Regulations that Protect and Recover Fish, Wildlife and Their Habitats. Sub-objective 1.

7. Protect and restore riparian habitat

The agency, as well as the Okanogan Ecoregional Assessment has prioritized riparian habitat management and protection. Riparian areas provide habitat for a large diversity of fish and wildlife species, a high densities of animals, important breeding areas and movement corridors. Additionally they provide the connectivity on the landscape between aquatic and upland habitats. Historically, riparian and wetland complexes were characterized by a mosaic of plant communities occurring at regular intervals along streams. Beaver activity and natural flooding were processes that enhanced and increased the quality and distribution of these areas. *Public concerns include: We in the Methow face challenges with growth and development of low elevation areas and habitat constrictions for wildlife species. Management plans are needed in different areas with different histories.*

A. Strategy: Continue to work with District and Area Biologists to identify and protect species and species associated riparian habitat, as well as identify additional riparian areas for restoration or protection. Example species include: Great blue herons, Bald Eagle roost sites, neotropical songbirds, tiger salamanders, spotted frogs, butterfly spp, and aquatic insect spp. Timeframe: Ongoing.

B. Strategy: Fence springs and riparian areas from overuse by permitted and trespass livestock, while providing and developing springs for stock water. Action: Sullivan's pond, Scott Canyon, Campbell Lake spring, Deadhorse Lake.

C. See Agency Objective Protect, Restore & Enhance Fish and Wildlife and Their Habitats. Sub-objective 2.

8. Protect and restore productive agricultural areas.

The agency, as well as the Okanogan Ecoregional Assessment has prioritized rural natural open space as a key element of habitat management and protection. These areas have comparatively high wildlife densities and species diversity, can be important wildlife breeding habitat or seasonal ranges, and provide critical movement corridors. Well managed agricultural areas on the MWA provide forage, cover and buffers in an area that would otherwise be prone to weed invasion. Furthermore, these agricultural

areas provide an aesthetically pleasing pastoral nature to the landscape. Protecting and restoring productive agricultural fields also provides a unique opportunity for WDFW to partner with local agriculturalists while supporting the economy of the citizens that live in the Methow Valley.

Public input : Farmers and ranchers deserve a chance to continue what they've been doing for years. Used to be usable ranches and family farms in the Methow, which is a vital part of this community. Community has diversified recently. Work with local ranch and ag. communities to come up with innovative ideas. Local farms and ranches perpetuate open space. Loss of farmland = weed patches and/or development. DFW responsible for not leaving feral fields- should restore dryland habitat or keep as farmland. Encourage ranching and farming on DFW land as long as it is for the benefit of fish and wildlife, and in exchange, not let weeds go to seed. Traditional range or farms are not appropriate in the valley - individual farmer/rancher can make good. Ranchers need to prove themselves by setting own standards. Give back the opportunity to the ranchers, such as Big Valley and the Judd Ranch, to prove we can do it. Disagreement between folks on whether to allow cattle to graze in new areas on the MWA. How can we as a group help to improve public rangelands? Big Valley Ranch is a highly productive ag. field that is turning to weeds based on the management practice of leaving it fallow. Should support the local economy by putting back into sharecropping lease, which would provide wildlife habitat as well. Farming can reserving fields for wildlife, control weeds, create a commercial crop, and create adjacent habitat.

A. Strategy: Restoration of historic dryland agricultural fields to viable shrubland functionality through reestablishment of native plant communities. See Agency Objective Agency Objective: Protect, Restore & Enhance Fish and Wildlife and Their Habitats. Sub-objective 6. Apply for IAC State Land Restoration Grant in May 2006.

B. Strategy: Maintain irrigated agricultural areas in grains, grasses and forbs to provide winter and spring forage for deer, upland birds, and a variety of wildlife species. See Application process and farming to begin 2006 for Methow (Lloyd-60 ac), Beaver Crk (Cloyd-60 ac), and Big Valley North (100 ac). See Agency Objective Protect, Restore & Enhance Fish and Wildlife and Their Habitats. Sub-objective 1.

C. Strategy: Restore productive irrigated agricultural areas to grains, grasses and forbs to provide winter and spring forage for deer, upland birds, and a variety of wildlife species. Legislative \$\$ for water infrastructure for Beaver Creek (Patterson-40 ac), Big Valley South (100+ ac), Texas Creek (Judd Ranch- 180 ac). See Agency Objective Protect, Restore & Enhance Fish and Wildlife and Their Habitats. Sub-objective 1.

D. Strategy: Continue to provide opportunities for prescribed grazing as a tool to manage vegetation and improve wildlife habitat. Action: set up permits with sensitivity to a variety of wildlife species and the health of the ecosystem, follow HB 1309 standards, prescribe grazing to benefit fish and wildlife habitat. See Agency Objective Protect, Restore & Enhance Fish and Wildlife and Their Habitats. Sub-objective 6.

E. Strategy: Assist with local outreach to find funding for CRM facilitator, and implement CRMs for any new and existing cattle permits associated with WDFW permits (assuming appropriate). Timeframe: Ongoing.

F. Strategy: Explore Grassbanking concept for Methow Watershed. Action: Attend Grassbanking Workshop and participate in 18-month assessment of grassbank potential in the Methow Valley. Work with local NRCS, OCD, and local ranchers. Timeframe: Oct. 2005-April 2007.

Agency Objective: Provide Sustainable Fish and Wildlife-Related Recreational and Commercial Opportunities Compatible With Maintaining Healthy Fish and Wildlife Populations and Habitats. Improve the Economic Well-Being of Washington by Providing Diverse, High Quality Recreational and Commercial Opportunities.

1. Provide public access compatible with fish, wildlife and habitat protection.

Access for hunting, fishing, wildlife viewing and other activities is an agency priority. However, access and recreation must be managed to protect fish and wildlife resources and to comply with federal and state regulations.

Public input: Public input clearly emphasizes the importance of providing recreational access with protections for the resource. Fences need adequate access for recreationalists.

A. Strategy: Provide access for hunting, fishing, hiking, walking, horseback riding, bird watching, wildflower viewing, butterfly watching, cross country skiing and interpretive and sightseeing opportunities. Timeframe: Ongoing.

B. Strategy: Provide open roads where no resource issues exist and when there are sufficient resources to maintain them. Timeframe: Ongoing.

C. Strategy: Close road access where road conditions are not safe or where conditions have a significant negative impact on fish and wildlife. Action: Work within Road Management and Abandonment Plans (RMAP) to close and rehabilitate designated roads on Cub Creek Unit. Timeframe: Annual.

D. Strategy: Provide hunting opportunities for Americans with Disabilities (ADA). WDFW manages an ADA program in two areas, the Rendezvous (WDFW land) and Bear Creek Roads near the Loup Loup Summit (USFS land). These roads are closed to motor vehicles during hunting season, unless registered with the ADA program through the WDFW Methow Wildlife Area headquarters. Action: Work with USFS to add an additional ADA area on USFS closed road system. Timeframe: 2008.

2. Improve the economic well being of Washington by providing diverse, high quality recreational and commercial opportunities compatible with fish, wildlife protection and habitat management.

Public input: Encourage dogs on lease, winter recreation, horseback riding, and expanded trail systems. Partner with MVSTA to help sign, maintain and formalize trails.

A. Strategy: Develop trail systems for non-motorized recreation, utilizing existing user trails on the MWA. Action: partner with MVSTA, Washington State Parks, OK County Planning Dept, ect. to designate and improve access and facilities including trails, parking access, informational kiosks, and signs.

B. Strategy: Maintain and provide camping and wildlife viewing opportunities on 13 campgrounds on the MWA. Firewood cutting is not allowed on WDFW land. Do not cut snags, rotting logs on ground or in a riparian area, or trees within 50 ft of

stream. Campgrounds do not maintain garbage systems, therefore the policy states “pack it in, pack it out” on all camping areas on the MWA. Timeframe: Ongoing.

C. Strategy: Work with Adopt-an-Area program to upgrade and modify campgrounds. Action #1: Fencing and modification of Boulder Creek Campground 2006. Action #2: fencing and modification of Beaver Creek Campground (MVBCCHA). Timeframe: Ongoing: Spring-Summer 2006.

3. Provide information about the area and educational opportunities to the public

Public input: ORV use is bad and getting worse. Find abuses and use volunteers to help protect the land. They are a problem and an annoyance; it doesn't seem like they are managed at all right now.

A. Strategy: Develop brochure and map of MWA for public distribution. Maps will include GIS information below.

B. Strategy: Develop GIS layers of all resources, roads, trails, parking and camping areas, site specific info on game and watchable wildlife opportunities, and other facilities available to the public. Timeframe: Ongoing.

C. Strategy: Provide informational kiosks and signs around the MWA. Cooperate with other agencies in developing and implementing educational and informational programs Action: Work with Respect the River Program, USFS. Apply for kiosk funding through the Watchable Wildlife Program. Install kiosks and signs spring-fall 2006. Timeframe: Ongoing.

D. Strategy: Work with law enforcement to develop and approve WAC that relates to no ORV use on MWA, shooting range limitations, extended campground use, ect. Timeframe: Ongoing.

E. Strategy: Continue signage posting “no motorized vehicles allowed off maintained road system”. Action: take down old signs, replace with new in strategic areas. Timeframe: Ongoing.

Agency Objective: Ensure WDFW Activities, Programs, Facilities and Lands are Consistent With Local, State and Federal Regulations that Protect and Recover Fish, Wildlife and Their Habitats

1. Manage weeds consistent with state and county rules and to protect and recover fish and wildlife and their habitats

Weed control is required by state law to protect public economic and natural resources.

Invasive weeds are one of the greatest threats to fish and wildlife habitat quality.

Cooperative weed efforts are encouraged to improve efficacy and to minimize impacts on adjacent landowners as part of the agencies good-neighbor priority. WDFW will continue to use Integrated Pest Management strategies, including biological control, chemicals, mechanical and cultural methods, to control invasive weeds. *Public concerns include: weed control as well as dollars for weed control needed. This should be a stewardship responsibility of the State. Trade weeds for wheat (agriculture). Need to inventory and map native vegetation and weeds before we can determine what to do about them. Also need to look at the landscape ecologically, why are the weeds spreading? Look at weeds like a wildfire: prevent, detect and respond, keep from spreading, let it burn. Need to go backwards before forwards- lots of neglect in past.*

A. Strategy: Produce and implement weed management plan (**Appendix 2**) to include weed identification and inventory, risk/threat, control priorities, and monitoring. Timeframe: Annually, May 2006.

B. Strategy: Search and destroy new invaders and “B” designate weed species including Dalmation toadflax, Houndstongue, Common tansy and whitetop on all units. Action: Focus on satellite populations to protect existing habitat until funding is allocated for large patches, such as abandoned agriculture fields. Timeframe: Ongoing.

C. Strategy: Coordinate weed efforts with federal, state and local entities to improve efficacy and minimize costs. Action: Keep County Weed Board abreast of MWA activities and keep involved in County Weed Plan and actions. Timeframe: Ongoing.

D. Strategy: Map all weed locations using GPS to create GIS layers showing all locations of weeds and treatments, to assist in monitoring and controlling weed infestations. Action: get Trimble GPS up and running for mapping purposes.

E. Strategy: Release biological control agents (bugs) to battle Dalmation toadflax, Canada thistle, and Diffuse knapweed. Continue to receive updated information on new biological controls. Timeframe: Ongoing.

F. Strategy: Apply for grants to control weeds in old agricultural fields and plant perennial native vegetation.

G. Strategy: Develop network and continue working with volunteers and volunteer work parties to inventory, cut and pull weeds. E.g. neighborhood network, Backcountry Horsemen, Americorp, WCC crew, Mule Deer Foundation, Outward Bound Community Course, and Okanogan County jail. Timeframe: Ongoing.

H. Strategy: Work with agricultural permittees to keep land in production to prevent weed invasion. See Agency Objective Agency Objective: Provide Sustainable Fish and Wildlife-Related Recreational and Commercial Opportunities Compatible With Maintaining Healthy Fish and Wildlife Populations and Habitats. Improve the Economic Well-Being of Washington by Providing Diverse, High Quality Recreational and Commercial Opportunities. Sub-objective 2.

I. Strategy: Control weeds along all roads including within MWA to reduce the spread of weeds from one area to another. Action: Utilize jail crew and WCC crews to hand pull roadside weeds.

J. See Agency Objective Agency Objective: Protect, Restore & Enhance Fish and Wildlife and Their Habitats. Sub-objective 5.

2. Manage species and habitats in compliance with the Endangered Species Act and Washington State fish passage, road management and forest practice rules

Federal law requires the protection and management of threatened and endangered species. State law requires fish passage and screening issues and forest road sedimentation issues to be addressed on state public lands. Forest thinning operations on agency lands must follow state forest practice law.

A. Strategy: Protect buffers adjacent to wetlands and riparian habitat. Timeframe: Ongoing.

B. Strategy: see Agency Objective Protect, Restore & Enhance Fish and Wildlife and Their Habitats. Sub-objective 3.

C. Strategy: Inventory all forest roads and fish passage structures to identify sedimentation and passage issues. Timeframe: Ongoing.

D. Strategy: Complete a forest Road Management and Abandonment Plan. Timeframe: Annually.

E. Strategy: Grade and rock any roads or areas necessary to provide cross drains to stop sedimentation into stream during heavy rain events. Action: Partner with USFS to stop firebreak erosion into Pearrygin Creek. Summer 2006-2008.

F. Strategy: Work with local organizations and agencies to update maps and data on all ESA and Heritage Database species and their habitats on the MWA. Assist to develop GIS layers depicting the location, species and vegetation communities.

3. Provide fire management on agency lands (Appendix 3)

Fire suppression agreements must exist for all agency lands to protect the people of Washington and to protect natural and economic resources of the agency and adjacent landowners.

A. Strategy: Continue contract with Department of Natural Resources (DNR) to provide fire suppression support on the MWA. Timeframe: Ongoing.

B. Strategy: Provide fire training for wildlife area manager and assistant manager. Work closely with USFS personnel. Timeframe: Annually.

4. Protect cultural resources consistent with state and federal law

Federal and state law requires an assessment of cultural resources on agency lands prior to activities that may impact those resources.

A. Strategy: Assess cultural resource value (biological, historic and archaeological) of all structures before renovation or removal. Assess for wildlife value as well (e.g. bats or Vaux's swifts). Assess Historical Societies interest in preserving and maintaining 1889-1940's homesteads. Action: work with interns and USFS to survey historic barns and outbuildings, in particular for Townsend's Big-eared bats. Work with OK Historical Society to write grants for preservation of historic homestead sites. Spring-summer 2006.

B. Strategy: Perform cultural resource survey and assessments as required. Action: Perform cultural resource surveys for agricultural lands where new watering infrastructure is needed for farming practices. Texas Creek Wildlife Unit (Judd Ranch), Beaver Creek (Patterson Place). Summer-fall 2006.

5. Pay county PILT and assessment obligations

State law requires the agency to pay PILT and county assessments.

A. Strategy: Pay PILT and assessments to counties. Timeframe: Annually, April 15th.

B. Strategy: Work with county commissioners to acknowledge and distribute correct information to the public regarding PILT. Timeframe: Ongoing.

6. Preserve, protect and improve the watershed in which the MWA is located

The quality of the watershed in which the wildlife area is located influences all aspect of the wildlife area. Degradation of the watershed will increase erosion and consequently the loss of soil that supports wildlife habitat.

- A. Strategy: Ensure that management of the wildlife area considers watershed plan recommendations. Timeframe: Ongoing.
- B. Strategy: Cooperate with private and public landowners to maintain and improve watershed quality. Timeframe: Ongoing.
- C. Strategy: Explore ways to give private landowners incentives to improve their habitat quality and quantity, which in turn will provide additional habitat for wildlife adjacent to WDFW land. Timeframe: Ongoing.

Agency Objective: Provide Sound Operational Management of WDFW Lands, Facilities and Access Sites.

1. Maintain facilities to achieve safe, efficient and effective management of the wildlife area.

- A. Strategy: Maintain office to provide a safe and effective workplace. Provide utilities, phone, computers, etc. Timeframe: Ongoing.
- B. Strategy: Organize site cleanup crews to remove hazardous boards, nails, and trash at sites on the MWA. Action: DOE Litter Grant to cleanup homesteads and Lloyd Ranch. Timeframe: May 2006.
- C. Strategy: Work with volunteer groups and WCC crew to remove all old garbage dumps and scrap metal piles on the MWA. e.g. Lloyd ranch, Elbow Coulee Rd., Shooting range, Headquarters Barn. Timeframe: Ongoing
- D. Strategy: Maintain campgrounds and parking areas to prevent resource damage and provide access- including signage of areas. Action: additional parking access and the campgrounds need attention at Beaver Creek CG and Chewuch CG.
- E. Strategy: Develop at least 1 new Adopt-an-Area Program/Year. Action: Try to establish 2005/06 Elbow Coulee Road- Pine Forest Project. 2005/06 Backcountry Horseman Adopt-a-CG Program. Timeframe: Ongoing
- F. Strategy: Assess the need for livestock fencing and remove approximately 5 miles of down fencelines per year because they are a hazard and/or barrier for humans and wildlife. Areas include: Big Buck, Riser Lake, Lloyd Ranch, and on the Golden Doe W.A.
- G. Strategy: Continue developing buck and pole barriers in camping areas to limit access by vehicles to wildlife trees and riparian habitat. Action: Beaver Creek CG.
Strategy: Maintain an informal shooting range during hunting season, or when environmental conditions are suitable. Action: Work with citizens interested in public shooting range to find public funding and access for public range on private land. Work with local volunteers to help clean the shooting range on a regular basis.
 Timeframe: Monthly.
- H. Strategy: Re-contour and reseed old gravel quarry to decrease toxic waste accumulation, prevent weed dispersal, and increase wildlife and human safety.
 Action: Lloyd Ranch.
- I. Strategy: Work with USFS for use of the Fire Camp on Big Valley Wildlife Area to provide benefits to the MWA, WDFW, the wildlife resource and the public.
 Timeframe: Ongoing.

2. Maintain other structures and physical improvements

- A. Strategy: Maintain all signs, gates, culverts, water structures, wells, irrigation systems to perform operation and maintenance of area. Timeframe: Ongoing.

B. Strategy: Replace/install new boundary and unit signs.

3. Maintain equipment

A. Strategy: Service all equipment including trucks, tractor and implements, weed sprayers, trailers, etc. Request replacement equipment when needed. Timeframe: Ongoing.

B. Strategy: Rent equipment when it is more efficient to do so or when needed. Timeframe: Ongoing.

4. Pursue funding opportunities

Public comments: Concerns with management and stewardship of Dept lands; why does WDFW acquire lands we can't take care of. Weeds need more money; stewardship needs its own pot of money and should not be considered O&M. Will WDFW provide the political and financial commitment to do more than just listen. Need to meet again to write to legislature to fund the plan in place and implement projects. If we put together the best WA Plan possible, then Olympia will take the Methow seriously that it needs funding to make it happen. Take advantage of volunteer and internship opportunities. Newspaper column looking for volunteers. It is easier for folks to take ownership if they are volunteering their time as community member. People have their eyes on the landscape when recreating.

A. Strategy: Apply for grants and other funding opportunities consistent with planned priorities to supplement funding. Timeframe: Ongoing.

B. Strategy: Seek out and develop partnerships with other government entities, e.g., federal, state, county, tribal and local agencies, e.g., USFWS, USFS, USGS, BLM, WaDNR, Okanogan County Noxious Weed Control Board, Okanogan County Sheriff's Office Jail to maximize use of resources for completing projects. Timeframe: Ongoing.

C. Strategy: Seek out and develop partnerships with Non-government Organizations (NGO's) and National, Regional and local sports groups. E.g., The Nature Conservancy, Methow Conservancy, Methow Natives, Washington Native Plant Society, Mule Deer Foundation, Fly-fishing clubs, Backcountry Horsemen, etc., to maximize use of resources for completing projects. Timeframe: Ongoing.

D. Strategy: Establish sharecropping agreements with local farmers to address cultivation needs and generate additional revenue to support and enhance O&M. Utilize sharecropping agreements to enhance and restore adjacent lands in lieu of permit fees. Action: Establish 3 new agricultural leases in 2006-2010 to assist in weed control and management on irrigated ag. fields. Timeframe: Ongoing.

E. Strategy: Develop "Internship" program for student volunteers. Action: Student intern funded by Kiwanis Club of Winthrop for Summer 2006.

F. Strategy: Develop volunteer Neighborhood Network idea for stewardship and eyes on MWA.

G. Strategy: Enroll lands in state or federal programs to generate revenue and accomplish desired habitat conditions. Timeframe: Ongoing.

5. Assess forest conditions with regard to catastrophic fire, insect and disease risks

The history of fire suppression in many cases has resulted in forest tree densities far greater than historic levels. Dense forest stands may create fire safety issues and risk to

the spread of detrimental forest insects and disease. *Public comments include: Need to pay attention to fire adapted plants and fire management on shrub-steppe and forested areas of the MWA. Need to consider fire as a tool for restoration, however consider recolonizations of weeds after a prescribed burn.*

A. Strategy: Continue to use the Pearygin Creek Fire area for continued research on fire, thinning, and effects to wildlife and vegetation composition. Timeframe: Ongoing.

B. Strategy: Investigate the potential for fire-use to achieve ecosystem management objectives where appropriate. Action: Partner and coordinate with Forest Service other adjacent landowners to incorporate their 20-year burn plan into MWA fire plan. Timeframe: Ongoing.

C. Inventory MWA for fire “ready” conditions to restore early seral stage shrub-steppe habitat.

D. Strategy: Assess timber-thinning and prescribed burning projects to reduce potential insect and fire danger and create natural forest conditions more suitable to a diversity of species. Action: learn by example and gather information.

6. Perform administrative responsibilities

A. Strategy: Develop, monitor, and implement budgets. Timeframe: Ongoing.

B. Strategy: Supervise employees and provide ongoing training opportunity to staff. Timeframe: Ongoing.

C. Strategy: Maintain files and records. Timeframe: Ongoing.

D. Strategy: Write weekly, monthly and yearly reports. Timeframe: Ongoing.

E. Strategy: Monitor for compliance, and renew grazing and sharecrop leases. Timeframe: Ongoing.

F. Strategy: Attend and participate in CRM meetings involving grazing permits on the SCWA or adjacent lands that could impact management on the SCWA. Timeframe: Ongoing.

G. Strategy: Work with staff to ensure high morale and job satisfaction. Promote self-motivation and good work ethics. Timeframe: Ongoing.

H. Strategy: Supervise contractors, lessees, permittees, volunteers, Washington Conservation Corps employees, other WDFW personnel, public and private organizations and fire crews on the area. Timeframe: Ongoing.

I. Strategy: Write, update and implement a wildlife area management plan, weed control plan and fire control plan. Timeframe: Ongoing.

J. Strategy: Conduct wildlife and habitat surveys. Identify and prioritize information and survey needs. Timeframe: Ongoing.

K. Strategy: Manage an extensive equipment inventory used for habitat maintenance, enhancement, restoration and preservation. Timeframe: Ongoing.

L. Strategy: Plan for and purchase supplies, tools and equipment. Timeframe: Ongoing.

M. Strategy: Attend meetings and meet with private individuals and agency representatives as needed. Timeframe: Ongoing.

7. Protect and apply water rights for best use

Water rights can impact wildlife area operations including food plots, restoration projects, etc. Water use can also reduce in stream volumes for fish and other animals.

Public comment: Provide irrigation water for sharecropping opportunities, wildlife use and habitat restoration.

A. Strategy: Identify and record all water rights and uses of water (**Appendix 4**).

Timeframe: May 2006

B. Strategy: Move all unneeded water rights permanently or temporarily into the State Trust Water Rights Program. Timeframe: Ongoing.

C. Strategy: Maintain, preserve, and utilize water rights in highly productive irrigated farmland and for restoration projects. Action: Big Valley and Lloyd Ranch. Timeframe: Ongoing.

D. Obtain capitol funding to replace well pumps to utilize water rights for fish and wildlife benefits. Action: south field on Big Valley, Beaver Creek (Patterson Place) and Lloyd Ranch. 2007/2008

E. See Agency Objective Provide Sustainable Fish and Wildlife-Related Recreational and Commercial Opportunities Compatible With Maintaining Healthy Fish and Wildlife Populations and Habitats. Improve the Economic Well-Being of Washington by Providing Diverse, High Quality Recreational and Commercial Opportunities. Sub-objective 2.

CHAPTER IV. PERFORMANCE MEASURES, EVALUATIONS AND UPDATES TO THE METHOW WILDLIFE AREA PLAN

Wildlife area plan performance measures are listed below. Accomplishments and desired outcomes will be evaluated to produce an annual performance report. The wildlife area plan is a working document that will evolve as habitat and species conditions change, as new regulations are enacted, and as public issues and concerns change. Plan updates will address these changes.

1. The Methow Wildlife Area 2006 performance measures include:

- Finish and review plans completed including: MWA plan, weed plan, and RMAP.
- Obtain funding and establish protocol for surveying weeds, vegetation types, and wildlife species presence on 1 WA unit per year for the next 5 years.
- Maintain contact with CAG at least 3 times per year.
- Reseed 20 acres of historic fallowed agricultural fields on the Rendezvous unit, and 20 acres of ag. fields on the Methow Unit Pearrygin Creek Burn area, both to native shrub steppe habitat.
- Prioritize weedy fields for future restoration on the MWA.
- Fence 1 mile of Riser Lake and associated riparian and wetland complexes if livestock grazing continues. Build deer exclosure fence and plant riparian shrubs within a 250 X 50 ft area on Riser Lake to expand and protect deciduous riparian habitat.
- Stop ALL Houndstongue seed production on Rendezvous Unit, Texas Creek Unit, and Little Cub Creek area with spot spraying and hand pulling crews.
- Follow-up on experimental treatment of 2 acres of Russian Knapweed in fall and spring.
- Survey all MWA units for Dalmatian Toadflax and increase biological controls along eastern edge of Methow unit while destroying all new interior invaders throughout MWA.
- Increase weed patrol and control on all Wildlife Area units away from roadsides.
- Removed and/or repair 1 structure that was identified as a safety concern. Perform cultural resource survey on all structures prior to demolition. Salvage wood for informational kiosks and future structures, or donate to local organizations.
- Survey, repair, and/or remove 5 miles of fenceline per year.
- Remove 1/8 mile of rip-rap on Pearrygin Creek to allow stream to follow a natural meander in old agricultural field. Follow up with riparian plantings and weed control.
- Work with Coordinated Resource Management Program to establish relationships with other agencies and local ranchers and to continue improving range management.
- Monitor 6 grazing permits and follow through on permit regulations and recommendations.
- Determine best use of Rendezvous grazing allotment.
- Develop management plan for Lloyd Ranch, including grazing permit, sharecropper permit, and restoration and habitat protection objectives.
- Conduct 10 long-term monitoring surveys (5 on Methow unit, 5 on Big Buck unit) and 2 shrub-steppe songbird surveys (1 on Methow unit and 1 on Big Buck unit).
- Continue photopoints and vegetation monitoring to determine effects of fencing at Peters Puddles.
- Obtain GIS layers and develop map of Methow Wildlife Area roads, access points, campgrounds, wildlife viewing opportunities, trail systems, ect.
- Print map of MWA
- Facilitate campground cleanup on Beaver Creek and Chewuch/ Boulder Creek campgrounds.
- Work with USFS Respect the River Program and education contractor.

- Assist District Biologist with acquisition development and management recommendations.
- Put water rights into production and establish agricultural permittees on Big Valley Ranch and Lloyd Ranch. Move unneeded water rights into trust at Big Valley. Determine best use of Judd Ranch and Beaver Creek water rights.
- Establish signs throughout Wildlife Area designating ORV use on established and maintained roads only.
- Provide additional parking and campground facilities at Beaver Creek Campground- work with MV Backcountry Horseman.
- Survey and monitor nesting Golden Eagles on the MWA for disturbance and fledgling success. Utilize volunteers and work with District Biologist Scott Fitkin.
- Work with volunteers to develop a long-term protocol and implement breeding amphibian population surveys.
- Lobby for additional funding to hire additional FTE (Bio II) for the MWA. Tasks are great, and current staff is inadequate to manage 30+K growing acres of the Methow Wildlife Area, especially given heavy emphasis on grazing and agricultural permits, political pressures, and increasing recreation the wildlife area

APPENDIX 1. METHOW WILDLIFE AREA CITIZENS ADVISORY GROUP (CAG) AND DISTRICT TEAM (DT) ISSUES AND CONCERNS

The purpose of meeting with the CAG and DT was to obtain input to help guide management actions on the wildlife area.

The Methow Citizen Advisory Group (CAG) met 4 times within a 3 month period, to first express issues and concerns, and then to discuss specific topics of interest and prioritize strategies relate to the Wildlife Area Plan. A draft of the introduction and history of the wildlife area and copies of the Agency's goals and objectives were distributed for review and discussion. The CAG's input was beneficial to the planning process, as they assisted in developing ideas and strategies to help implement management goals and objectives. Below is a list of CAG meeting dates, the topic of discussion, and a summary of issues discussed throughout fall and winter 2005. Underlined statements below indicate that the input was received from the DT. Issues that are not underlined originated from the CAG. Tables 3 and 4 represent the topics of greatest interest and associated strategies that were discussed in detail during these CAG meetings.

1. August 30, 2005. CAG meeting- Issues and Concerns.
Email dialog, most pertinent issues of concern to discuss at future meetings
2. October 18, 2005. CAG meeting- Livestock grazing and weed management
3. November 8, 2005. CAG meeting- Access/recreation and agriculture/farming
4. November 22, 2005. CAG meeting- Fire management and native habitat restoration
5. December 13, 2005. CAG meeting- Wildlife Area Plan presentation and discussion.
Comments on Wildlife Area Plan due by December 22, 2005.

Issue A. Access/Recreation

- Regulate public access in big game wintering areas. Seasonally close roads, monitor and educate on impacts of snowmobiles to wildlife. The CAG decided snowmobile use is inappropriate on WDFW land and has no compatibility with Methow Wildlife Area goals and objectives. Advantage of snowmobile regulation is there are nearby areas for snowmobiles on USFS snowmobile trails. Greatest concern was Lester Rd which is a county road, open (not groomed) to snowmobiles in the heart of mule deer winter range in the Methow.
- Expand trail systems and access to trail system and partner with MVSTA to help sign, maintain and formalize trails for hiking, horseback riding, mountain biking, and cross country skiing where wildlife sensitive areas are not an issue. Fences need adequate access for recreationalists, but not so much that open gates become a problem for grazing permittees. Areas of importance include: Lewis Butte, Pipestone Canyon, Campbell and Cougar Lake, Deadhorse Lake, Aspen Lake. Trails and users build advocacy!
- Close roads where vehicle use is detrimental. Public outcry could be large, but trade-off is the amount of damage tolerated.
- Campgrounds need attention- partner with USFS Respect the River Program up the Chewuch and inventory areas where abuse is occurring.
- Dogs on lease may be critical to protect the wildlife from disturbance and mortality.

Issue B. Budget

- Concerns with management and lack of funding for management (and not acquisitions) are consistent within the CAG. Stewardship and weeds need more money; stewardship should not be considered O&M dollars, unless it is routine and consistent. Acquisition of large landscapes set aside for wildlife habitat is critical to the Methow, however isn't there a way to request more stewardship dollars?
- The Methow Wildlife Area needs a political and financial commitment to do more than just listen. A well-defended and well-written plan is a great way to initiate the request for additional funding. The group agreed it is a good idea to write to legislature and ask for funds to implement the plan and projects within the plan.
- There is a lot of local support and interest in WDFW lands in the Methow. Local citizens becoming involved and taking ownership in state lands can go a long way towards enforcement and stewardship. How about an internship program or neighborhood network to help put more people on the ground. Put a column in the newspaper soliciting for help with specific projects.

Issue C. Weed Management

- Money needed for more intensive weed control. Each weed has its own method of treatment, what works best. Need to utilize all resources to identify the most appropriate treatment for each weed or area.
- Trade weeds for wheat (agriculture). Farming practices have been abandoned in historic agricultural fields purchased by WDFW, and this had led to an increase and spreading of noxious weeds. Not beneficial for wildlife or their habitat, and not following through with the Dept's good neighbor policies.
- Critical to inventory, map and monitor the weed problem. Then need to assess priority on where and what to treat first. Assess which weeds are where, and are they spreading, stabile, or decreasing, or moving? Treat weeds like a wild-fire: Prevention, detection, rapid response, keep from spreading, or let it burn. Focus on satellite populations while encircling the areas infested until additional funding comes along.

Issue D. Roads

- Maintain roads to prevent impacts to water quality.
- Manage roadside vegetation to avoid weed infestations.
- Conduct road closures (seasonal, permanent etc.), where appropriate.

Issue E. Enforcement

- Need to increase enforcement on the wildlife area.
 - Illegal off-road vehicle use, especially in wetlands
 - Garbage and litter
 - Vandalism
 - Trespass issues
 - Under age drinking
- Need to increase enforcement on the wildlife area.
 - Illegal hunting and fishing
 - Off road vehicles

Issue F. Public Information, Education and Involvement

- Easier to take ownership if volunteering time as community member.
- Volunteers can be used for a variety of purposes. Eyes on land to increase enforcement, neighborhood networks to take additional care of each Wildlife Area Unit, partnerships with local organizations to do specific cleanup projects, volunteer groups for detections and mechanical treatments of weed infestations, school groups to make and check nest boxes. Can also use volunteers for signing roads and trails, and cleanup post hunting season campgrounds and Dept lands. Individual or a group can be assigned an area to check or monitor on a regular basis.
- Place ads in the newspapers soliciting for volunteers. Use interns and graduate students to increase workforce.
- Enlist folks to help clean up areas such as: Deadhorse lake fencing, Riser Lake, Elbow Coulee, finish Perry-Brewster property, fencing on the Golden Doe, Beaver Creek Campground.
- Signage is important on WDFW land. Not just “don’t do this” type signs, but educational “save the shrub steppe” signs. More “welcome” signs at entry and exit points of each Methow Wildlife Area Units and high profile areas. List the species present, how to find them, impacts to the habitat, why they are important.

Issue G. Monitor, Survey and Inventory

- Determined by several CAG members to be the highest priority for the Methow Wildlife Area. Need to inventory weeds, wildlife and vegetation before we can determine how to manage the resources.
- Mandate for good science.
- Recognize and inventory smaller ecosystem - cryptogamic soil crusts, butterflies, macroinvertebrates...
- Include volunteers and neighbors who might serve as stewards to help manage and monitor particular sites.

Issue H. Community, agriculture, and farming

- The CAG has expressed their concern for productive irrigated farmland, and the lack of water rights we currently have access to. Irrigation can provide water and forage for wildlife use, utilize farming to prevent noxious weeds, and help implement habitat restoration efforts.
- Need to inventory and prioritize suitable farmland and assess wildlife habitat value of the land. Part of a farm can be reserved for wildlife, control weeds, create a commercial crop, and create habitat. Trading services such as restoration, buffers, third cuttings, etc. for fees seems very appropriate for the purposes of benefiting fish and wildlife and their habitats.
- Used to be usable ranches and family farms in the Methow, which is a vital part of this community. WDFW can work with local ranch and ag communities to come up with innovative ideas. Encourage ranching and farming on DFW land as long as it is for the benefit of fish and wildlife, and in exchange, not let weeds go to seed. Traditional range or farms are not appropriate in the Methow Valley however individual farmers and ranchers need to and would like to prove themselves because they set their own standards much higher than in the past. Would like to make sure that WDFW

permittees are living up to these standards so as not to give the ranching/ farming community a bad name.

- Local farms and ranches perpetuate open space. The loss of farmland to development is detrimental, however the loss of farmland to strict wildlife habitat affects the farmer too, potentially cutting back his/her operation and viability of their livelihood.
- Dryland agriculture is not as profitable today as it may have been years ago (mostly due to drought conditions and prices of gasoline). WDFW can effectively restore dryland habitat. Give back the opportunity to the ranchers, such as big valley and judd ranch- to prove we can do it.

Issue I. Native Habitat Restoration

- Shrub-steppe conservation as important as forested habitat. The CAG discussed the goal of “no net loss” of ecological condition of shrub steppe habitat and how to monitor and implement this. No decisions made at this time. CAG would like to see WDFW and the Methow Wildlife Area focusing on biodiversity, and not just on game species management.
- The group had a discussion on some non-native species (for example Crested wheatgrass) and their utility for native grass substitutes, soil stabilization, and weed control. Restore degraded areas and protect the rest. Agreed an expert knowledgeable on this subject would be extremely helpful.
- Concerns from the CAG about guarantees for followup and maintenance support/ funding. Will the money be there in 5-10 years down the road?
- Condition assessment needed for native shrub-steppe ecosystems in the Methow and on Dept land. Potentially look at mule deer range in the past, and current mule deer range to see if anything has changed.
- The CAG decided that it is important to restore degraded landscapes especially in highly visible areas, and protect the best areas. Find the worst of the bad; overlay the best of the best; where is the worst threatening the best- start here! A balance between the two seems most appropriate.

Issue J. Upland Bird Management

- Restoration of sharp-tailed grouse and upland bird management has been a topic of discussion that we will return to in future meetings. CAG members and old-timers in the Valley recall the days of sharp-tail grouse populations, lekking displays, and birds utilizing the wheat fields and river birch during the winter. Development and loss of winter habitat is predicted to be a large factor of their demise.
- Restoration potential for sharp-tail grouse on Beaver Creek, Rendezvous, Fraser Creek, Big Buck Wildlife Area.
- Grain fields have a lot of use by upland birds (grouse and quail) as well as other wildlife species. See farming/agriculture.

Issue K. Livestock Grazing

- The CAG has been briefed on Grassbanking discussions for the Methow. We are still exploring the concept and how to implement the idea to our situation here in the Methow. The CAG has equally discussed the CRM process.
- Maintenance of quality wildlife habitat and high standards expected of grazing permittees and of WDFW by the CAG. Enforcement of permits and strategies to

increase resources for monitoring and enforcing permits is pertinent. Management plans are worthless if WDFW is not enforcing the terms. Need to communicate with Wildlife Area Manager and public or ultimately you get penalized.

- Questions arose on how does livestock grazing positively affect shrub-steppe? We do not have local data to support this, however long term monitoring effects will help to document changes over time. CRM programs and WDFW livestock grazing permits are outlined and set up to benefit wildlife habitat. Grazing and weeds need to be addressed and evaluated.
- Reacquaint permittee and manager with permit specs and ask if all requirements combined are too much for any one rancher to do. Local partners can help alleviate these pressures if it is too much for the rancher. For example, if a fence needs replacing, volunteers can help get the job done.

Issue L. Fire Management

- True need for the Methow Wildlife Area to create and manage for a mosaic of habitat on the landscape. Especially with the lack of wildfire in shrub-steppe and ponderosa pine communities. Create early seral stage conditions to support the wildlife that depend on this ecosystem. What diversity (flora and fauna) results from different burn mosaics?
- Partner with other agencies and landowners on adjacent properties to see if any overlapping opportunities exist. Check with USFS for their 10-20 year burn plan.
- Look at precedent set on other WLAs (School fire, Chiliwist, Bridgeport Canyon)

Table 3. Top 6 Public Issues, Strategies, and Prioritization : Fall 2005.

Table represents the six topics of greatest interest and associated strategies that were discussed in detail during 3 additional Methow Citizens Advisory Group meetings. Numbered strategies in each column were prioritized by Methow Citizens Advisory Group (top to bottom).

CAG Issues	Survey/ Inventory/ Mapping	Livestock Grazing	Weed Management	Access/ Recreation	Agriculture/ Farming	Fire Management
Strategies	plant and wildlife	1. Acknowledge and support ranching as vital part of this community	*. priority plan	1. ORV's not appropriate on WLA (inc. snowmobiles)	1a. Restore old agriculture fields to native grasses	1. use as mngt tool ACTION: learn from other examples- Sinlehekin, ect.
	special and unique habitats	2. Permits set up with sensitivity to wildlife and health of ecosystem	1. Protect existing habitat in good condition	2. Enforcement and training for volunteer enforcement	1b. Utilize highly productive irrigated farmland	2. inventory WLA for fire "ready" areas
	shrub-steppe, riparian, wetlands, corridors, streams, homesteads	2. CRM process	2. Keep in production-agriculture to prevent weeds (see ag/farming)	3. Signage and on-site information	2. not let weeds go to seed	3a. create mosaic of habitats
	Native American use and interest	3. permittees must adhere to specifics of permits-enforcement of permit	3. Attention to fallowed ag plots and pasturelands	4a. development and maintenance of public access areas (roads, trails, gates) with attention to wildlife sensitive areas	3. water rights - preserve and maintain	3b. shrub-steppe, pine woodlands, aspen woodlands
	baseline condition assessment	4. riparian fences	4. focus on satellite populations	4b. work with MVSTA and trail network with attention to user built trails	4. develop local biotype seed sources	4. weed issues associated with fire
	weeds	cattle grazing in new areas	Management plans for specific areas	5. Increase blocked roads or locked gates to decrease resource damage	habitat opportunities	4. Pearrygin Crk research
	include monitoring in this category	boundary fencelines, partners and adjacent landowners	obtain more money for weed control	public use-overuse	plots for upland birds-diversity and #s	5. partner with other agencies (USFS)

	infrastructures and hazards	valley locals and bidding process	O&M to include stewardship	explanations to regulations		salvage logging for wildlife habitat
	major roads and trails, fences, gates	how to improve public rangelands	inventory and map (see survey/inv/mapping)	fencing and cattleguards		
	livestock areas and their water access	field trip to look at impacts on native vegetation	ecological conditions of landscape	litter and fines		shooting range
	health of streams	grassbanking	prevention, detect, respond, no spread	campground gating		
		grazing hay fields	research plots- treatment and control	public are agents of change and alteration of habitat		
			biological control agents	user responsibilities		
			jail crew and WCC	Encourage dogs on lease		
			develop network of volunteers (see vol)	RMAP (road management and abandonment plan)		
			obtain working information- adaptive management	ADA program		

Table 4. Additional Public Issues and Strategies identified by Methow Citizen's Advisory Group: Fall 2005.

CAG Issues	Deer Management	Upland Bird Conservation	Public Relations/Education	Volunteers/Neighborhood Network	Habitat Corridors	Aquatic Life	Hazard Removal	Support/Funding	Special Habitat Conserv.	Monitoring
Strategies	deer damage issues	rebuild habitat and they will come	sponsor "Wildlands Weekend"	how to get everything done without them.	streams	communication with fisheries entities	Organize site cleanup crews	grants avail for priority issues?	if you fix it, they will come	progress? success?
	deer fencing	include in agric or native plant restoration	Steppin up to Shrub-Steppe	everyone hates free labor	mule deer	fence riparian habitat and all impoundments to protect from unmanaged grazing	volunteers, WCC, adopt an area	fund raising	upland bird habitat incl. Here	identify goals and objectives
	hay loss from 3rd cutting		interpretive signs (not the "do not" kind	contact folks proactive to share info	protect riparian corridors and kettle ponds/lakes	habitat improvement or maintenance activities	homesteads, wire, farm equip, litter, dumps	management and stewardship	sharp-tail grouse	include in native habitat and restoration?
	resident mule deer in valley bottom		outreach		Educate about importance			volunteer and intership projects	beaver restoration	
	Reduce speed limits		signs litter-be careful					sharecroppers restoration in lieu of fees	Create a mosaic of habitat	
	vital part of community		encourage people to office to talk shop					develop partnerships	document species use and need on WLA	
			Work with USFS Respect the River program						restoration of lost of habitat	

			create map of WLA for public distribution						Maintain springs and guzzlers	
									Maintain agriculture fields for forage	
									leave forage and cover buffers around ag field	
									limit weed dispersal	
									cavity nesters- neotrop.songbirds	
									presence/absence and role of cryptic species	
									cryptogrammic soils	
									Protect large roost trees	
									Western Gray Squirrel	

APPENDIX 2. METHOW WILDLIFE AREA WEED MANAGEMENT PLAN

Weed Control Goals on WDFW Lands

The goal of weed control on Department lands is to maintain and improve the habitat for wildlife, meet legal obligations, provide good stewardship and protect adjacent private lands.

Weed control activities and restoration projects that protect and enhance fish and wildlife populations and their habitats on Department lands are a high priority. When managing for specific wildlife species on our lands the weed densities that trigger control are sometimes different than on lands managed for other purposes (e.g. agricultural, etc.). For example, if a weed is present at low densities and does not diminish the overall habitat value, nor pose an immediate threat to adjacent lands, control may not be warranted. WDFW focuses land management activities on the desired plant species and communities, rather than on simply eliminating weeds.

Control for certain, listed species is mandated by state law (RCW 17.10 and 17.26) and enforced by the County Noxious Weed Board. WDFW will strive to meet its legal obligation to control for noxious weeds listed according to state law (Class A, B-Designate, and county listed weeds).

Importantly, WDFW will continue to be a good neighbor and partner regarding weed control issues on adjacent lands. Weeds do not respect property boundaries. The agency believes the best way to gain long-term control is to work cooperatively on a regional scale. As funding and mutual management objectives allow, WDFW will find solutions to collective weed control problems.

Weed Management Approach

State law (RCW 17.15) requires that WDFW use integrated pest management (IPM), defined as a coordinated decision-making and action process that uses the most appropriate pest control methods and strategy in an environmentally and economically sound manner to meet agency programmatic pest management objectives, to accomplish weed control. The elements of IPM include:

Prevention- Prevention programs are implemented to keep the management area free of species that are not yet established but which are known to be pests elsewhere in the area.

Monitoring- Monitoring is necessary to implement prevention and to document the weed species, the distribution and the relative density on the management area.

Prioritizing- Prioritizing weed control is based on many factors such as monitoring data, the invasiveness of the species, management objectives for the infested area, the value of invaded habitat, the feasibility of control, the legal status of the weed, past control efforts, and available budget.

Treatment- Treatment of a weeds using biological, cultural, mechanical, and chemical control serves to eradicate pioneering infestations, reduce established weed populations below densities that impact management objectives for the site, or otherwise diminish their impacts. The method used for control considers human health, ecological impact, feasibility, and cost-effectiveness.

Adaptive Management- Adaptive management evaluates the effects and efficacy of weed treatments and makes adjustments to improve the desired outcome for the management area.

The premise behind a weed management plan is that a structured, logical approach to weed management, based on the best available information, is cheaper and more effective than an ad-hoc approach where one only deals with weed problems as they arise.

Weed Species of Concern on the Methow WLA

Weeds of concern on the Methow include Dalmatian toadflax (*Linaria dalmatica ssp. dalmatica*), houndstongue (*Cynoglossum officinale*), diffuse knapweed (*Centaurea diffusa*), whitetop (*Cardaria pubescens*), Canada thistle (*Cirsium arvense*) kochia (*Kochia scoparia*), oxeye daisy (*Leucanthemum vulgare*), Russian knapweed (*Centurea repens*) and common tansy (*Tanacetum vulgare*). This list is based on species that have been documented on the wildlife area (Table 1).

Table 5. Weeds found on the Methow WLA and their state and county weed class listing.

Weed Species	2005 State Weed Class	2005 County Weed Class	Wildlife Unit(s)	2005 Treated Acres
Dalmatian Toadflax	B-Designate	B-Designate	Big Buck, Golden Doe, Methow	197
Houndstongue	B	R & S	Little Cub Cr., Rendezvous, Texas Cr.	11
Diffuse Knapweed	B	R & S	Big Buck, Methow, Rendezvous	50
Whitetop	C		Methow, Texas Cr, Rendezvous	158
Russian thistle			Methow, Rendezvous	50
Kochia	B	R & S	Methow	5
Oxeye Daisy	B	New Invader	Big Valley	5
Russian Knapweed	B		Methow, Texas Cr., Rendezvous, Golden Doe	45
Canada Thistle	C		Big Buck, Big Valley, Methow	20
Common Tansy	C		Big Valley, Chewuch R., Rendezvous	11
Baby's Breathe			Texas Cr	20
General Weeds				140

B-Designate are state-listed and mandatory for control to prevent seed production/spread.

New Invader is not an official state classification, but indicates the county reserves the right to implement control.

R&S (Reduction and Suppression) Weeds are of wide distribution. Control along transportation corridors is recommended.

Management for individual weed species can be found in the following “Weed Species Control Plan” (WSCP) sections. *Managers- The WSCP should be no more than two pages (I mean one page, front & back) long for each weed species.*

DALMATION TOADFLAX CONTROL PLAN

Scientific name: *Linaria dalmatica* ssp. *dalmatica*
Updated: 2005

Common name: Dalmatian toadflax

DESCRIPTION: Dalmatian toadflax is an erect, short-lived, perennial herb, 0.8 to 1.5 m tall. Dalmatian toadflax is a perennial species that spreads by horizontal or creeping rootstocks and by seed. A mature plant can produce up to 500,000 seeds, which are primarily dispersed by wind. The seeds may live up to ten years in the soil (Robocker 1974; Morishita 1991). Most seedlings emerge in the spring when soil temperature reaches 8° C at 2.5 cm. Germination in the fall is probably limited by soil water content, as well as possibly seed dormancy with the average life span of a plant being three years (Robocker 1974).

Mature Dalmatian toadflax plants are strongly competitive. Studies indicate that plots without Dalmatian toadflax may produce two and a half times as much grass as plots with toadflax (Robocker 1974). Mature plants are especially competitive with shallow-rooted perennials and winter annuals. Because of its competitive ability, Dalmatian toadflax is a concern in pasture and rangelands, as well as in natural areas, where it may out-compete more desirable, native species. Dalmatian toadflax occurs in a variety of habitats, including: roadsides, pastures, rangelands, and waste areas. It has spread most extensively west of the 100th meridian, occurring primarily on coarse-textured soils, ranging from sandy loams to coarse gravels (Alex 1962).

This weed appears to be spread by cars, deer, and birds. Individual plants and small groups of plants are found throughout much of the Methow Valley.

Dalmatian toadflax is a state-listed class B-Designate in the management areas.

MANAGEMENT INFORMATION:

Intensive clean cultivation can effectively control Dalmatian toadflax. A successful approach includes at least a two year effort, with eight to ten cultivations in the first year and four to five cultivations in the second year (Morishita 1991; Butler and Burrill 1994). Cultivation should begin in early June and be repeated so that there are never more than seven to ten days with green growth visible (Butler and Burrill 1994). Since Dalmatian toadflax seedlings do not compete well for soil moisture against established winter annuals and perennials, control efforts should include attempting to establish and manage desirable species that will compete with toadflax (Morishita 1991; Butler and Burrill 1994).

Herbicide can be an effective tool for control and applicators should refer to the PNW Weed Management Handbook, or other reputable resources, for product recommendations and timing.

Calophasia lunula, a defoliating moth, is well-established in Washington and reportedly provides good control (William et al. 1996). *Mecinus janthinus*, a recently introduced stem boring weevil, shows promise. *Brachypterolus pulicarius*, although usually associated with yellow toadflax, can survive and may reduce seed production of Dalmatian toadflax.

CURRENT DISTRIBUTION ON THE SITE

The first infestations in the Methow Valley were noted at the intersection of the East Chewuch Road and Bear Creek Road to the west of Pearrygin Lake. Infestations on the WLA now occur in several places, most notably near the intersection of Bear Creek Road and USFW Road 5009-100 (Ramsey Creek Road).

ACRES AFFECTED BY WEED: ~200

WEED DENSITY: Low (Widely Scattered)

GOALS

Control expanding populations
Prevent new occurrences

OBJECTIVES

Survey and map existing populations
More accurately calculate the acres affected by Dalmation toadflax
Release biological controls
Treat all plants that can be reached by ATV before they produce seed
Survey nearby units for pioneering infestations

ACTIONS PLANNED

In 2006, the following applications/treatments will occur:

- The Lloyd Ranch will be surveyed and spot treated in the spring/summer by ATV using herbicide. This area will be analyzed for biological control potential.
- The Pearrygin Flats burn unit was surveyed in fall 2005 and will be treated by volunteer hand pulling crews and spot treated in the spring by backpack sprayer and ATV using herbicides.
- The biological agent *Mecinus janthinus* will be released in the spring or early summer in areas concentrated in native shrub-steppe vegetation, and where the terrain is too difficult to survey or implement control.
- Satellite individual populations in native vegetation will be spot treated by backpack sprayer using herbicides.

Monitoring will continue on an annual basis on nearby units.

CONTROL SUMMARY AND TREND

2005- Approximately 197 acres were treated.

Control is slowly reducing the number of acres affected by approximately 20 acres in the past three years. The weed density in the affected area has not noticeably changed. We will continue to monitor biocontrol agents and their affects on the population.

HOUSTONGUE CONTROL PLAN

Scientific name: *Cynoglossum officinale*
Updated: 2005

Common name: Houndstongue

DESCRIPTION: Houndstongue is a biennial or short-lived perennial that grows 1-4 ft tall. Houndstongue is a very strong competitor that competes with desirable forage. Its thick, deep taproot enables it to be a strong competitor for soil resources. The seeds have the ability to attach to people, the coats of livestock and vehicles, enabling the plant to spread great distances. Houndstongue is poisonous. It contains pyrrolizidine alkaloids that stop the reproduction of liver cells. Considered non-palatable under range conditions, livestock will avoid it. However, houndstongue is eaten when dried plants are found in hay, and the toxic properties are still capable of poisoning livestock.

Seeds germinate from February to May. Seeds remaining on the soil surface can remain viable up to two years. At 1-6 inch soil depth the seeds germinate within one year. The highest germination percentage occurred in seeds buried at 1/2 inch. A rosette forms the first year and is able to resist mowing and grazing and also able to withstand severe drought. Flowering occurs the following year around June and seeds are formed and dropped at the end of the summer. The seeds overwinter in about the top 1 cm of soil.

MANAGEMENT INFORMATION:

Herbicide can be an effective tool for control and applicators should refer to the PNW Weed Management Handbook, or other reputable resources, for product recommendations and timing.

Cultivation of young rosettes in the autumn or early spring gives effective control. Mow flowering stems close to ground to reduce seed set. Clipping during the second year flowering can greatly reduce seed production. Reseed problem areas with fast growing grasses. Do not overgraze. Biocontrols for houndstongue include *Mogulones cruciger* (approved and released in Canada) is a root-feeding weevil. Another, *Longitarsus quadriguttatus*, has good results but may have an effect on native North American Boraginaceae (Lamming). Hand-pulling effectively will keep plants from flowering and producing seedheads, however must occur several times within the spring, summer and fall.

CURRENT DISTRIBUTION ON THE SITE

Houndstongue has only been found on three WLA's—Texas Creek, Little Cub Creek, and the Rendezvous (Riser Lake). Individual and small groups of this weed are scattered on these areas with no large infestations known.

Houndstongue a B-listed weed.

ACRES AFFECTED BY WEED: ~20

WEED DENSITY: Low (Scattered)

GOALS

Eradicate expanding populations
Prevent new occurrences

OBJECTIVES

Survey and map existing populations
More accurately calculate the acres affected by houndstongue
Investigate biological control availability and literature off-target effects.
Treat all plants that can be reached by ATV before they produce seed
Survey nearby units for pioneering infestations
Control cattle within Houndstongue affected areas

ACTIONS PLANNED

- In 2006, the Rendezvous Unit will be surveyed and mapped. Houndstongue rosettes will be spot treated in the spring by backpack sprayer using herbicides, and mechanically hand-pulled in the summer and fall to prevent seedhead development and spread.
- In 2006, the Little Cub Creek Unit will be surveyed and mapped. Houndstongue rosettes will be spot treated in the spring by backpack sprayer using herbicides, and mechanically hand-pulled in the summer and fall to prevent seedhead development and spread.
- Because of the low density of houndstongue at Texas Creek, the infestation will be surveyed in early July, backpack sprayed using herbicides and mature plants pulled when they become visible.
- Monitoring will continue on an annual basis on nearby units.

CONTROL SUMMARY AND TREND

2005- Approximately 11 acres were treated.

A consistent maintenance effort is required each year to keep houndstongue at the current level and eradicate the problems before they spread to adjacent land. One acre (widely scattered plants) was treated in 2005 with 34 hours spent on hand removal in this area. Due to the dense riparian area where this plant is growing, hand pulling and backpack spraying is the only way to effectively reduce the potential number of mature plants going to seed, thereby reducing overall acreage in approximately 3 years (houndstongue seed viability is ~2 years).

KOCHIA CONTROL PLAN

Scientific name: *Kochia scoparia*

Common name: Kochia

Updated: 2005

DESCRIPTION: Kochia is an annual plant that reproduces from seeds. It has a deep taproot. The erect, much-branched stems are three to seven feet long, smooth below but usually hairy above. The alternate, simple leaves are pubescent to nearly glabrous, one to two inches long, lanceolate to linear with hairy margins, and without petioles. The small green flowers lack petals and are found in clusters in the axils of the upper leaves and in terminal spikes. The brown flattened seeds are about 1/16 inch long and grooved on each side. The species typically produces around 14,600 seeds per plant. Seeds are dispersed in the fall when the plant becomes a tumbleweed. The plant tumbles with the wind, dropping seeds as it is blown about. Laboratory studies report germination rates of 76 percent or better over a temperature range of 39-106 degrees F. Seeds buried in the soil have five percent viability after one year and zero percent after two years. Kochia reproduces by seed only. Like many other species of the Chenopodiaceae, it becomes a tumble weed when mature. An abscission zone develops at the base of the stem in autumn. When winds reach velocities of 25 miles per hour, the stem breaks and the plants tumble. Kochia overwinters as seeds. The seeds germinate very early in spring because of their frost tolerance. Kochia grows very rapidly through spring and summer and sends down a very long taproot (up to 16 feet). It flowers in late summer and sets seed. Kochia is able to spread long distances very rapidly. Its ability to tolerate drought also enables it to spread quickly. It was considered a rare plant in North Dakota and Kansas in the late 1920's, but with the drought during the 1930's it became abundant. Native to southern and eastern Russia, kochia was introduced to North America from Europe. It was grown as an ornamental hedge around gardens, or used as a backdrop planting because of its dense, conical shape and attractive red color in the late fall. It has since escaped cultivation and spread westward.

MANAGEMENT INFORMATION:

Early tillage in the spring gives good control of the kochia seedlings. Mowing or slashing the plants before flowering is effective in reducing seed production. Infestations of triazine resistant kochia has been found along railroad lines in eleven states. Research has shown that triazine resistant biotypes were more susceptible to 2,4-D ester than triazine susceptible biotypes. There are also biotypes resistant to 2,4-D or Banvel (dicamba). It is suggested that rotating herbicides would reduce the possibility of an increase in the proportion of plants tolerant to 2,4-D or Banvel.

CURRENT DISTRIBUTION ON THE SITE

Lower Pipestone Canyon agricultural field has a dense Kochia population that is planned for native vegetation restoration in the coming years.

ACRES AFFECTED BY WEED: 10+

WEED DENSITY: Low to high

GOALS

Control expanding populations
Prevent new occurrences

OBJECTIVES

Survey and map existing populations

Continue treating known infestations with herbicides or mechanical control

ACTIONS PLANNED

- In 2006, Lower Pipestone Canyon will be disced in the spring to prevent plant development and the area will be mowed in the summer to prevent any further seed development. Restoration of this area is planned to begin in spring 2007.
- Monitoring will continue on an annual basis on all units.

CONTROL SUMMARY AND TREND

2005- Approximately 60 acres and 3 miles of road were treated.

At present kochia is predominately confined to the agricultural field near Balky Hill Road on the Methow Unit. It should be relatively easy to control with mechanical control and spot spraying with herbicide.

CANADA THISTLE CONTROL PLAN

Scientific name: *Cirsium arvense*

Common name: Canada thistle

Updated: 2005

DESCRIPTION: *Cirsium arvense* is an erect perennial rhizomatous thistle, usually 0.5 - 1.0 m tall, distinguished from all other thistles by 1) creeping horizontal lateral roots; 2) dense clonal growth; and 3) small dioecious (male and female flowers on separate plants) flowerheads. Four varieties are recognized: var. *vestitum* Wimm. & Grab. (leaves gray-tomentose below); var. *integrifolium* Wimm. & Grab. (leaves glabrous below, thin, flat, and entire or shallowly pinnatifid); var. *arvense* (leaves glabrous below, thin, flat, and shallowly to deeply pinnatifid); var. *horridum* Wimm. and Grab. (leaves glabrous below, thick and wavy, with many marginal spines) (Moore 1975). The most common variety of the species in North America is *horridum*. All varieties are interfertile, and one plant of var. *integrifolium* produced seedlings of all four varieties (Detmers 1927). Within each variety there are numerous genotypes, which vary in appearance and in response to management activities. Additionally, *Cirsium arvense* changes morphology in response to environmental conditions (Nadeau and Vanden Born 1989).

Phenology of *Cirsium arvense* varies with ecotype, but follows a general pattern. In Washington state, overwintering Canada thistle roots develop new underground roots and shoots in January and begin to elongate in February (Rogers 1928). Shoots emerge March - May when mean weekly temperatures reach 5° C. Rosette formation follows, with a period of active vertical growth (about 3 cm/day) in mid-to-late June. Flowering is from June to August in the U.S., and June to September in Canada, when days are 14 to 18 hours long (Hodgson 1968, Van Bruggan 1976, Moore 1975): *Cirsium arvense* is a long-day plant (Linck and Kommedal 1958, Hunter and Smith 1972). Natural areas invaded by *Cirsium arvense* include prairies and other grasslands in the midwest and Great Plains and riparian areas in the intermountain west. *Cirsium arvense* threatens natural communities by directly competing with and displacing native vegetation, decreasing species diversity, and changing the structure and composition of some habitats. Canada thistle invades natural communities primarily through vegetative expansion, and secondarily through seedling establishment. *Cirsium arvense* spreads primarily by vegetative growth of its roots. The root system can be extensive, growing horizontally as much as 6 m in one season (Rogers 1928). Most patches spread at the rate of 1-2 m/year (Amor and Harris 1975). Most *Cirsium arvense* roots can be found directly below the above-ground shoots, with little extension beyond the border of a patch (Donald 1994). Apparently, the horizontal roots give rise to shoots frequently as they expand the range of a patch. Horizontal roots grow within 15-30 cm of the soil surface, and typically grow in a straight line for 60-90 cm, then bend down and grow vertically. Another horizontal root system is usually initiated at the downward bend (Rogers 1928). Vertical roots can grow as deep as 6.8 m (Rogers 1928) but most roots are in the upper 60 cm of soil (Haderlie et al. 1987). *Cirsium arvense* roots commonly reach a depth of 1.5 m in one-year old plants, and 2 m in 2-10 year old plants (Nadeau 1988). *Cirsium arvense* spreads vegetatively through horizontal growth of the root system, which can extend 4-5 m radially in one season (Bakker 1960). Individual clones can reach 35 m in diameter (Donald 1994).

Cirsium arvense readily propagates from stem and root fragments and thus plowing or other soil disturbance can increase thistle densities (Nadeau and Vanden Born 1989). Small root fragments (2 cm) can survive and produce clones up to 2.8 m across within one year (Rogers 1928). Hayden (1934) reported plants developing from root fragments as small as 0.5 cm, and 95% establishment from 1 cm

long root fragments. Root fragments are able to produce new shoots, independent of the presence of root buds (Nadeau 1988). Rogers (1928) stated that a six week old root fragment can still regenerate a plant. Partially buried stem fragments have much higher survival than fully buried fragments, as the cut stems remain photosynthetically active (Magnusson *et al.* 1987). Regrowth from stem fragments is highest in mid-June (>70%) and lower thereafter (0-55%) (Magnusson *et al.* 1987). *Cirsium arvense* is native to southeastern Europe and the eastern Mediterranean (Moore 1975) and possibly to northern Europe, western Asia and northern Africa (Detmers 1927, Amor and Harris 1974). It now has a near global distribution between 37 and 58-59 degrees N in the northern hemisphere (Moore 1975), and at latitudes greater than 37 degrees S in the southern hemisphere exclusive of Antarctica (Amor and Harris 1974). *Cirsium arvense* occurs throughout Europe, northern Africa, western and central Asia, northern India, Japan, China, and northern North America, South Africa, New Zealand, Tasmania, and southeastern Australia (Dewey 1901, Rogers 1928, Hayden 1934, Amor and Harris 1974).

MANAGEMENT INFORMATION:

Where possible it is best to kill all *Cirsium arvense* plants within a site. Where resources are limited two strategies are recommended: 1) Target *Cirsium arvense* clones based on location, controlling plants in high quality areas first, then in low quality areas. Treat entire clones to prevent resprouting from undamaged roots: 2) Target female clones to reduce seed production and additional spread of *Cirsium arvense*. However, some apparently "male" clones are self-fertile. Control techniques for natural areas are constrained by the need to minimize damage to native species. The best option in prairies and other grasslands is to first enhance growth of native herbaceous species by spring burning, and then cut or spot treat Canada thistle with glyphosate when it is in late bud or early bloom (usually June). It is necessary to prevent shoot growth for at least two years to deplete roots and kill Canada thistle. *Cirsium arvense* management programs should be designed to kill established clones since the species spreads primarily by vegetative expansion of the root system.

Prevention of seed production is a secondary consideration since spread by seeds is relatively rare. On the other hand, seedlings are the most susceptible growth stage (Bakker 1960). In areas that are susceptible to thistle invasion but which have not yet been invaded, management programs should be implemented to prevent the species from becoming established. It is important to understand the biology of *Cirsium arvense* as control is greatly influenced by clonal structure (Donald 1994), growth stage (Tworkoski 1992), season of treatment, weather conditions, ecotype (Hodgson 1964), soil type, and control method(s) used. A single control method is rarely effective and it is often necessary to use two or more methods at any given site (Lee 1952, Donald 1992, Diamond 1993). In addition, treatments or combinations that are effective at one site may be ineffective at others (Frank and Tworkoski 1994).

Canada thistle's deep, well-developed root systems make it resilient to most control methods including herbicides. However, *Cirsium arvense* undergoes several growth stages during the growing season and during certain stages root carbohydrates are depleted. Root carbohydrate depletion is related to growth stage and is greatest when flowering occurs, but replenishment is related only to environmental conditions, and generally occurs in late summer and fall. Younger growth stages (spring) are likely more susceptible to herbicide, but the root system is larger and more difficult to kill in spring before the flower stalk emerges; older growth stages (fall) are somewhat less susceptible, but the root system is depleted and smaller, and assimilates are naturally moving from the leaf tissues to the root system (Tworkoski 1992). More assimilate (and hence herbicide) moves into the roots under short days and low temperatures (fall) than long days and warm temperatures (summer; McAllister 1982).

Herbicide effect is enhanced when 1) *Cirsium arvense* roots are weakened during the growing season by herbicide treatment, crop competition, or frequent mowing or tilling; and 2) new shoots are stimulated to grow. Suitable herbicides (e.g. glyphosate) should be applied to new growth when leaves are green (September or October). Avoid applying herbicide to old leaves (thick cuticle limits absorption) or to drought-stressed leaves. Hunter (1996) found that control is improved if thistles are cut in late July and the resprouts treated with glyphosate about 4 weeks later in late August (the 'August rosette stage'). Second best treatment time is at flower-bud stage, when root reserves are lowest, particularly under droughty conditions (Haderlie *et al.* 1987). However, native species can be damaged by growing season herbicide application. Mowing temporarily reduces above-ground biomass, but does not kill *Cirsium arvense* unless repeated at 7-28 day intervals for up to 4 years. This intensity of mowing is not recommended in natural areas, where it would likely damage native vegetation. Mowing just twice a year, in mid-June and September may reduce or contain Canada thistle. When mowing, cut high enough to leave > 9 leaves/stem, or >20 cm of bare stem tissue, as mature Canada thistle leaves and stems independently inhibit development of shoots from rootbuds. When the primary stem is removed, rootbuds are stimulated to produce new shoots that might otherwise be suppressed, especially under low humidity.

Early studies recommended mowing at frequent intervals to starve Canada thistle's root systems and remove it from farm fields and pastures (Cox 1913, Johnson 1912, Hansen 1918, Detmers 1929). Mowing monthly for a four-year period eliminated practically all thistles (Welton et al. 1929) and mowing at 21-day intervals weakened roots and prevented seed production (Seely 1952). Hodgson (1968) found that mowing alfalfa fields twice annually, at Canada thistle's early-bud to pre-flowering stage (early to mid-June in Montana) and early fall (September) reduced Canada thistle to 1% of its initial value in four years. Mowing two to three times a year can prevent seed set (Hansen 1913, Rogers 1928) but mowing once a year is ineffective (Donald 1990). In order to prevent production of viable seeds, stems must be mown before the flowers open when they have been open for only a few days. Stems with flowers that have been open 8-10 days can develop viable seeds (Derscheid and Schultz 1960).

Larinus planus, commonly known as the Canada thistle bud weevil, is a seed-eating weevil. Canada thistle reproduces most often by vegetative regrowth, and thus the weevil will only effect seedhead development and reduce wind-blown seeds. Larval stages of this weevil are considered the destructive stage to the developing plant, however adults in large numbers may damage the upper leaves and developing buds as well.

An alternative approach to weed control that uses no chemicals or herbicides is livestock. Goats and sheep are known as specialists on Canada thistle specifically, and are effective at removing undesirable vegetation. The MWA is interested in exploring this holistic ecosystem management approach.

CURRENT DISTRIBUTION ON THE SITE

Heaviest infestations on the Big Valley Wildlife Unit, and scattered occurrences are prevalent within riparian areas (Campbell Lake and Scott Canyon) where vegetation disturbance has occurred.

ACRES AFFECTED BY WEED: ~60

WEED DENSITY: Low to high

GOALS

Control expanding populations
Prevent new occurrences

OBJECTIVES

Survey and map existing populations
More accurately calculate the acres affected by Canada thistle
Continue treating infestations with a combination of mechanical control and appropriate use of herbicide

ACTIONS PLANNED

- Mow, graze, or use weed eaters to eliminate seed heads prior to flowering as described above. Treat rosettes in fall with herbicide.
- Monitoring will continue on an annual basis on all units

CONTROL SUMMARY AND TREND

2005- Approximately 20 acres were treated.

Some infestations are declining due to annual mowing and herbicide applications. We have not seen effects from biocontrols to-date.

WHITETOP CONTROL PLAN

Scientific name: *Cardaria draba*

Common name: Whitetop

Updated: 2005

DESCRIPTION: *C. draba* is a hardy perennial with stout, erect or procumbent stems that can grow 2-5dm tall. The plant is leafy below and branching above with grayish stems (Jepson, 1953). Plants are glabrous or nearly so at the top and densely hairy below (Mulligan & Findlay, 1974). In general, they have a gray-green, soft hairy appearance (hence the name 'hoary').

Seedlings are distinguished by their hypocotyl, which is dull brown-green, but green above. Seed leaves are 2.5x7-9mm, pale, dull gray-green, with a sharp, pepper taste. While young, the leaves are more or less opposite below but alternate above and obscure the stem. Leaves are rolled in bud (Kummer, 1951).

Mature *C. draba* leaves are blue-green, 1.5-7.5 (or even 10) cm long (Fernald, 1950), and are broadly ovate to obovate (Fischer *et al.*, 1978). The lower leaves are long, slender, and taper to a short petiole (Robbins, 1952; Mulligan & Frankton, 1962). The margins are irregular, and may be either smooth or toothed. The leaf surface is weakly to densely hairy (Mulligan and Findlay, 1974). These leaves wither before the flowers open (Scurfield, 1962) and are shed as the seeds mature (Selleck, 1965). The upper leaves are shorter and broader (Fischer *et al.*, 1978). They lack developed petioles, and clasp the stem. The leaf bases may have two sagittate lobes (Fischer *et al.*, 1978; Mulligan & Frankton, 1962).

C. draba blooms in early spring and looks like conspicuous patches of snowy white (Robbins *et al.*, 1952; Fischer *et al.*, 1978). The showy inflorescences consist of many white flowers in a flattened corymb of racemes. The flower pedicels (stalks) diverge slightly from the stem. Each flower is 2mm wide, and has four petals with long narrow bases, like a spoon (Robbins *et al.*, 1952; Mulligan & Findlay, 1974). The sepals are green and 1.5-2.5mm long. Like other mustard species, there are six stamens and one pistil.

Cardaria species are native to southwest Asia, although *C. draba*'s range extends into southeast Europe (Mulligan & Frankton, 1962). *C. draba* probably traveled to the USA in ship's ballast or contaminated alfalfa (Mulligan & Findlay, 1974). It was first collected in North America in Yreka, California in 1876, and Ontario, Canada in 1878 (Robbins, 1940; Mulligan & Findlay, 1974). Other collections, such as in Napa, California (in 1893), a southwestern alfalfa field (in 1898), and New York City (also in 1898) firmly established its presence on the continent (Robbins, 1940; Robbins *et al.*, 1952).

MANAGEMENT INFORMATION:

Because they can regenerate from their extensive root systems, the hoary cresses readily re-establish after eradication measures. Therefore, control must be persistent, and requires at least 2-3 years of follow-up work (Blackman, *et al.* 1939; Garrad, 1923; Willis, 1950).

Successful control is most likely achieved with a combination of approaches. Selleck (1965) used a combination of mowing and competitive cropping to control *C. chalepensis* and *C. pubescens*. O'Brien and O'Brien (1994)--managers for The Nature Conservancy--controlled *C. draba* by ceasing its irrigation, removing outlying plants, and increasing the general health of the grasslands

they were managing. Other managers for The Nature Conservancy have decreased grazing (Carr, 1995), or developed restoration plans (Hill, 1995).

Prevent new infestations originating from seed sources. Seed may travel in contaminated hay, on farming equipment, and in fresh manure (Carr, 1995). *Cardaria* seeds have been eliminated from manure after one month of decomposition under very moist, warm conditions in late summer (Anonymous, 1970).

Cutting is somewhat effective in controlling *C. draba*. A combination of weed-whacking and applying 2,4-D from a backpack sprayer has provided 50% control at a preserve maintained by The Nature Conservancy (O'Brien & O'Brien, 1994). Meanwhile, a single late-April treatment of cutting plants back to the ground did nothing to control plants in England (Willis, 1950). Cutting in this way, combined with an herbicide application, was no more effective than using herbicides alone. If cutting is to be used, it clearly should be timed properly. Cutting before plants are flowering does little to control plants, while waiting for the plants to be in full flower will result in smaller plants and less seed production (McInnis *et al.*, 1990). However, McInnis *et al.* 1990 recommend that cutting plants be combined with grazing as a primary or long-term solution for control of *C. draba*.

CURRENT DISTRIBUTION ON THE SITE

Whitetop is on many Units of the Wildlife Area, and varies in its density and productivity accordingly. It can be found in dense populations on the Big Buck Unit, Rendezvous Unit, Golden Doe Unit, and in agricultural fields on Lower Pipestone, Lloyd Ranch, and the old Brewster place.

ACRES AFFECTED BY WEED: ~600

WEED DENSITY: Low to high

GOALS

Control expanding populations

Prevent new occurrences

OBJECTIVES

Survey, map and monitor existing populations

More accurately calculate the acres affected by whitetop.

Continue treating infestations with a combination of mechanical control and appropriate use of herbicides

Continue to research and evaluate effective control measures

ACTIONS PLANNED

- Mechanical fallowing of fields on the Riser Lake agricultural fields will be followed by fall planting of Great Basin wildrye this fall.
- Survey and map infestations on the Big Buck Unit and the Golden Doe.
- Use early spring grazing as a means of control on the Lloyd Ranch. Appropriate herbicides will be applied and restoration of Pearygin Creek will begin fall 2006.
- Work with CRM group and ranchers to lighten disturbance by cattle to areas where whitetop has infiltrated into native shrub-steppe vegetation (areas on the Big Buck Unit). This should allow the native forbs and bunchgrasses to successfully outcompete non-native species.
- Monitoring will continue on an annual basis on all units

CONTROL SUMMARY AND TREND

2005- Approximately 140 acres were treated.

Declining in control areas. Increasing in areas where no control measures have been introduced or where reseeding disturbed sites has not occurred. Rehabilitation of formally infested areas will use Great basin wild rye as a natural competitor. Control and monitoring of sites for reestablishment of whitetop is essential to long term maintenance.

RUSSIAN KNAPWEED CONTROL PLAN

Scientific name: *Acroptilon repens*

Common name: Russian Knapweed

Updated: 2005

DESCRIPTION: *Acroptilon repens* is a perennial herbaceous plant of the aster (sunflower) family (Asteraceae). It is characterized by its extensive root system, low seed production, and persistence. Russian knapweed spreads through creeping horizontal roots and seed.

The stems of *Acroptilon repens* are erect, thin, stiff, corymbosely branched, 45-90 cm (18 to 36 in) tall, and when young are covered with soft, short, gray hair. Lower stem leaves are narrowly oblong to linear-lanceolate, and deeply lobed. The upper leaves are oblong, toothed, and become progressively smaller. Rosette leaves are oblanceolate, irregularly pinnately lobed or almost entire, 5-10 cm long, and 1-2.5 cm broad. The flower heads of Russian knapweed are urn-shaped, solitary, 15-17 mm high, and composed of disk flowers only (Zimmerman 1996). Involucres are 12-14 mm high, 5-7 mm broad, ovoid, entire, and greenish at the base with a papery, finely hairy tip. Flowers are numerous, all tubular. The petals are 12.5-13 mm, pink or purple, turning straw colored at maturity. Anthers are 4.5-5.5 mm long, tails absent. The stigma is 3.5 mm long. The pollen diameter is 48-51 μm , spherical, 3-pored, thin-walled, about 2 μm thick and finely granular.

Achenes (seeds) are 2-3 mm long, oval and compressed, 2 mm broad and 1 mm thick (Watson 1980). Achenes are grayish or ivory, with long white bristles (pappus); 6-11 mm long at the tip when young, but these fall from the seed as it matures (Allred and Lee 1996). Achenes are slightly ridged longitudinally with a sub-basal scar immediately lateral to the tip of the base of the seed (Watson 1980).

Acroptilon repens has a well-developed root system, which functions as the major means of propagation and spreading. The roots of *Acroptilon repens* can extend more than 7 meters below the soil surface with 2-2.5 meters of growth occurring the first year and 5-7 meters in the second year (Zimmerman 1996). The roots are easily recognizable by their black or dark brown color and presence of small alternately arranged, scale leaves which support buds in their axils (Zimmerman 1996). These buds develop into adventitious shoots, enabling the plant to spread rapidly, and form dense colonies.

Acroptilon repens is native to Mongolia, western Turkestan, Iran, Turkish Armenia, and Asia Minor. It is now found on every continent, except Antarctica. Russian knapweed is listed as a serious noxious weed of dryland crops in the southern former Soviet Republics (Watson 1980).

Russian knapweed was first introduced into Canada around 1900 as a contaminant of Turkestan alfalfa seed (Watson and Harris 1984). It did not become a serious weed in Canada until 1928, and its spread is linked to the distribution of knapweed-infested hay (Maddox *et al.* 1985). It is now widespread in the southern portions of the four western provinces and southern Ontario.

The introduction of Russian knapweed into the United States is also thought to be the result of impure Turkestan alfalfa seed, and possibly sugarbeet seed (Maddox *et al.* 1985). It was first introduced in California between 1910-1914. Since then, it has become widespread in the United States and is currently found in at least 412 counties in 21 states (Maddox *et al.* 1985). It is most common in the semi-arid portions of the western U.S. and adjacent Canada, but infestations have also been reported in South Dakota, Minnesota, and Virginia (Maddox *et al.* 1985). The worst-infested states are California, Idaho, Montana, Oregon, and Washington.

MANAGEMENT INFORMATION

A. repens is a strong competitor and can form dense colonies in disturbed areas. Dense patches of Russian knapweed may have up to 100-300 shoots/m² (Watson 1980). The plant extends radially in all directions and can cover an area of 12 m² within two years (Watson 1980).

Russian knapweed invades many disturbed western grassland and shrubland communities, as well as riparian forests. Once established, Russian knapweed can dominate an area and significantly reduce desirable vegetation (e.g. perennial grasses). *A. repens* contains an allelopathic polyacetylene compound which inhibits the growth of competing plants (Watson 1980). Tests conducted with alfalfa (*Medicago sativa*), barnyard grass (*Echinochloa crusgalli*), and red millet (*Panicum miliaceum*) indicated Russian knapweed effectively inhibits root length elongation of grasses as well as broad-leaved plants by 30% when the polyacetylene compound is at a soil concentration of 4 parts per million (Stevens 1986). This allelopathic effect, combined with dense vegetative reproduction, allows for Russian knapweed to quickly colonize and dominate new sites. Infestations of Russian knapweed can survive indefinitely through their root system (Watson 1980). A stand in Saskatchewan has survived for almost 100 years (Allred and Lee 1996), and Watson (1980) reported that stands of Russian knapweed have been reported to survive for more than 75 years.

There is no single “silver bullet” control method for Russian knapweed. Lasting control requires an integration of mechanical control, chemical control, biological control, proper land management, and vegetative suppression. An effective management program must first control existing infestations, and then promote repopulation by native plants. Continued monitoring and follow-up treatments should be conducted annually to eliminate any re-infestation of knapweed.

The keys to controlling Russian knapweed are to 1) stress the weed and cause it to expend nutrient reserves in its root system, 2) eliminate new seed production, and 3) control its vegetative spread. If sufficient human resources are available, mechanical control is good place to start. Pulling Russian knapweed plants two to three times annually contained, but did not eliminate, an infestation in Washington (Youtie 1998). Cutting, mowing or discing several times annually will also control the existing topgrowth. Often, the plants that do re-emerge are smaller in size and lower in vigor. This is a good indication that the plants are under stress and that their nutrient reserves are declining.

If an infestation is too large to be treated mechanically, herbicides can be applied for effective control. TordonTM (picloram), TranslineTM (clopyralid), CurtailTM (clopyralid + 2,4-D), and Roundup® (glyphosate) are herbicides that have been shown to be effective (Beck 1996, Duncan 1994). Timing the application of herbicides can be critical and is dependent upon the particular herbicide and surrounding environmental conditions.

Biological control agents can place additional stress on Russian knapweed plants. Two biological agents for Russian knapweed have been released in the United States; *Subanguina picridis*, a gall forming nematode, and *Aceria acroptiloni*, a seed gall mite. These have not been used to-date on the MWA.

Once the initial infestation has been controlled, native species should be replanted to act as a vegetative suppressant. Suppressor species must remove a significant amount of moisture from the

soil during the seedling stage, when knapweeds are most vulnerable. Early emergence, rapid dense growth, and maintenance of high vigor until frost are attributes required by plant species to suppress Russian knapweed.

CURRENT DISTRIBUTION ON THE SITE

Found in varying degrees of density and area on all units

ACRES AFFECTED BY WEED: ~200 **WEED DENSITY:** medium, widely scattered patches.

GOALS

Control expanding populations
Prevent new occurrences

OBJECTIVES

Survey and map existing populations
More accurately calculate the acres affected by Russian knapweed
Survey nearby units for pioneering infestations
Continue treating infestations with herbicides or mechanical control
Outcompete populations in disturbed agricultural sites using mechanical and short-term herbicide control, as well as re-vegetating the area.

ACTIONS PLANNED (2006)

- Riser Lake and Pearygin Flats restoration to native vegetation projects will aide in competition and balance of soil structure
- Survey and map distribution of all weed species on the Golden Doe Wildlife Unit
- Continue to monitoring on an annual basis on all units

CONTROL SUMMARY AND TREND

2005- Approximately 40 acres were treated.

Infestations are localized and static. The proximity of some infestations to water limit treatment options, however treatment of upland sites is straight-forward and continuing. Infested disturbed areas will be reseeded with basin wild rye (a good natural competitor). Whitetop and cheatgrass control is essential on these sites once the Russian knapweed is eliminated to reduce competition with the wild rye.

DIFFUSE KNAPWEED CONTROL PLAN

Scientific name: *Centaurea diffusa*

Common name: Diffuse knapweed

Updated: 2005

DESCRIPTION: The genus name *Centaurea* commemorates the centaur, the mythical creature of Hippocrates, half horse and half man (Allred and Lee 1996). The specific epithet *diffusa* refers to the open branching pattern of mature plants (Allred and Lee 1996). *Centaurea diffusa* is a highly competitive herb of the aster (sunflower) family (*Asteraceae*). The plants first form low rosettes and may remain in this form for one to several years. After they reach a threshold size they will bolt, flower, set seed, and then die. Thus they may behave as annuals, biennials or short-lived perennials, bolting in their first, second, third, or later summer, respectively. Plants of this type are often called semelparous perennials or short-lived monocarpic perennials.

Stems are upright, 10-60 cm (4-24 in) tall from a deep taproot, highly branched, angled, with short, stiff hairs on the angles (Allred and Lee 1996). There are two types of leaves. The long, deciduous basal leaves, which form the rosette, are stalked and divided into narrow, hairy segments, 3-8 cm (1-3 in) long, and 1-3 cm (0.4-1 in) wide (Zimmerman 1997, Allred and Lee 1996). The stem, or cauline, leaves, which are alternately arranged on the stems, are smaller, less divided, stalkless, and become bract-like near the flower clusters (Zimmerman 1997, Allred and Lee 1996). Flower heads are broadly urn-shaped, 1.5-2.0 cm (0.6-0.8 in) tall, solitary or in clusters of 2-3 at the ends of the branches (Allred and Lee 1996, Watson and Renney 1974). The heads contain two types of flowers, ray flowers around the edges surrounding tubular disk flowers. The petals are white, rose-purple, to lavender (Allred and Lee 1996, Watson and Renney 1974). Mature seeds are formed by mid-August (Watson and Renney 1974). A single diffuse knapweed plant can produce up to 18,000 seeds (Harris and Cranston 1979) and a stand of diffuse knapweed can produce up to 40,000 seeds per square meter (Watson and Renney 1974). In one study, open-pollinated, purple-flowered plants set significantly more seed than white-flowered plants (Harrod and Taylor 1995). Schirman (1981) determined that diffuse knapweed seed production was 1,000 fold that necessary to maintain observed levels of infestation. Laboratory germination tests showed up to and sometimes greater than 95% seed viability (Zimmerman 1997, Schirman 1981). These two observations indicate that an extreme reduction of seed production would be needed to control diffuse knapweed.

Centaurea diffusa is a native of Asia minor, the Balkans, and the southern portion of the former Soviet Union, especially the Ukraine and Crimea (Zimmerman 1997). Diffuse knapweed is also common in Romania, the former Yugoslavia, northern Italy, Turkey, Greece, Bulgaria, Syria, and the eastern shore of the Mediterranean (Zimmerman 1997). Diffuse knapweed is found on plains, rangelands, and forested benchlands, particularly on rugged terrain that is not well suited for cultivation. In the United States, *Centaurea diffusa* is generally found on light, dry, porous soils (6). Diffuse knapweed has a northern limit of 53°N Latitude (Watson and Renney 1974), and has been observed at elevations up to 7,000 feet (Zimmerman 1997).

Diffuse knapweed can thrive in semi-arid and arid conditions which allows it to be a serious problem in the western United States and the arid southwestern interior of Canada, especially British Columbia (Zimmerman 1997). The density of a diffuse knapweed stand is often correlated with the level of soil disturbance. Additionally, diffuse knapweed prefers open habitats to shaded

areas (Watson and Renney 1974). *Centaurea diffusa* is not common on cultivated lands or irrigated pasture because it cannot tolerate cultivation or excessive moisture (Watson and Renney 1974).

Diffuse knapweed was first collected in the U.S. in a Washington state alfalfa field in 1907 and is thought to have been introduced through impure Turkestan alfalfa or possibly hybrid alfalfa seed from Germany (Zimmerman 1997). Diffuse knapweed is now widespread throughout nineteen states, including all of the contiguous states west of the Rocky Mountains (Zimmerman 1997). Idaho, Montana, Oregon, and Washington report the worst infestations (Zimmerman 1997). In western Canada, levels of diffuse knapweed are increasing and roughly 7.5 million hectares appear to be susceptible to knapweed invasion (Harris and Cranston 1979).

MANAGEMENT INFORMATION:

An effective management program needs to first control existing infestations, and then develop a land management plan to deter re-infestation. Since diffuse knapweed reproduces entirely by seed, the key to controlling existing infestations is to eliminate new seed production and deplete the existing seed bank. Since diffuse knapweed tends to grow in dense patches, it is relatively easy to locate and conduct spot treatments. If adequate labor is available, and the infested area is relatively small, hand pulling before seed set may be an effective method of control. Tordon (picloram) is the most widely recommended herbicide for treatment of diffuse knapweed (Harris and Cranston 1979, Watson and Renney 1974). 2,4-D, dicamba, and glyphosate are also considered effective (Muller-Scharer and Shroeder 1993, Watson and Renney 1974). Long-term control has been extremely effective with the development of the *Larinus minutus* (knapweed weevil) as a biocontrol for diffuse knapweed.

Once the existing infestation has been controlled, steps should be taken to deter any new infestations of diffuse knapweed. Walk through hand pulling or spot herbicide treatment programs should be conducted three times annually for several years to eliminate any seedlings that germinate from seeds that break out of dormancy. In the fall, the number of rosettes can indicate the quantity of diffuse knapweed plants that will bolt the following spring and help determine what type of management effort will be required. A successful management program should set a goal of < 5% knapweed cover. This is the assumed density of the weed in its native range (Muller-Scharer and Shroeder 1993). Lasting control will require a combination of proper land management, biological control, physical control, minimal if any chemical control, and suppression by desirable vegetation. This “cumulative stress” method will keep the plant constantly under stress, reducing its ability to flourish and spread. Also, a cumulative stress approach provides a level of redundancy in case one type of control treatment is missed or ineffective. Additionally, since diffuse knapweed has the ability to travel and spread seeds over relatively long distances as a tumble weed, an effort should be made to analyze prevailing winds and infestations on neighboring lands to identify any populations that may pose a threat. Public awareness should be included in any management program. Diffuse knapweed does not respect boundaries and maintaining a high level of public awareness is important for successful control (Muller-Scharer and Shroeder 1993).

Several herbicides are relatively effective at controlling diffuse knapweed. Tordon (picloram) is the most widely recommended (Harris and Cranston 1979, Watson and Renney 1974). Other effective herbicides include dicamba, 2,4-D, and glyphosate (Beck 1997, Youtie 1997, Watson and Renney 1974). To save money and reduce grass injury resulting from higher use rates of a single herbicide, several of these herbicides can be combined (Beck 1997). Tank-mixes of picloram and

dicamba (0.25 to 0.5 lb./acre + 0.125 to 0.25 lb./acre), picloram plus 2,4-D (0.188 lb./acre + 1.0 lb./acre), and dicamba plus 2,4-D (0.5 lb./acre + 1.0 lb./acre) all control diffuse knapweed (Beck 1997). A backpack sprayer or a wick is highly recommended in small areas to minimize damage to non-target plants. Herbicides should be applied before the mature plants set seed to maximize effectiveness.

Currently, there is no single biological control agent that effectively controls diffuse knapweed populations. The biological control of weeds is based on the premise that insect feeding kills and/or stresses plants, or reduces seed production, and eventually causes a reduction in weed density (Berube and Myers 1982). Biological controls, which lower the competitive ability of weeds, could also enhance the effectiveness of other control methods. Biological agents rarely completely eliminate the target pest from an area. Complete elimination of the pest would be self-defeating to long-term control as it would lead to the starvation of the agent and leave the area wide open to re-invasion. WDFW has had some success releasing *Larinus minutus*. *Larinus minutus* a seed eating weevil native to Greece, and now established Montana, Oregon, and Washington. Adult weevils are 4 to 5 mm (0.16 to 0.2 in) long, black, and have a large snout. They deposit eggs in the unopened seed-heads between the pappus hairs from June to September. The larvae feed on pappus hairs and move downward to the seeds. Each larva constructs a cocoon and pupates within it. Adults are active in the field from May until August and will feed on leaves and flowers prior to laying eggs. Adults generally live up to fourteen weeks.

CURRENT DISTRIBUTION ON THE SITE

Found predominately along roadsides within the units as well as adjacent county roads, and in previously disturbed areas. Large infestations exist at Campbell Lake, Cougar Flats, Lloyd Ranch, Big Buck, and areas on the Golden Doe.

ACRES AFFECTED BY WEED: ~200 patches.

WEED DENSITY: Low, widely scattered

GOALS

Control expanding populations
Prevent new occurrences

OBJECTIVES

Survey, monitor and map existing populations
More accurately calculate the acres affected by diffuse knapweed
Expand knowledge of bio-control agents on diffuse knapweed populations
Continue to work with researchers at Utah State University to develop control methods (activated carbon plots).

ACTIONS PLANNED

- Continue releasing biological control agents in large infestations.
- Rehabilitation using mechanical control (fallow and reseeded) of disturbed areas.
- Monitoring will continue on an annual basis on all units

CONTROL SUMMARY AND TREND

2005- Approximately 50 acres were treated.

Declining. Diffuse knapweed is primarily confined to roadsides and disturbed sites and thus relatively easy to control. Diffuse knapweed declined to relatively low densities until last year, when spring moisture conditions allowed for seed germination. Biocontrols can be found at most of these sites (*Larinus minutus*).

GENERAL WEEDS CONTROL PLAN

Scientific name: *Many*

Common name: General Weeds

Updated: 2005

DESCRIPTION: General weeds describe mixed vegetation that interferes with maintenance, agricultural, or restoration activities, where keying plants to individual species is not appropriate. Examples of general weeds may include vegetation occurring along roadsides, parking areas, trails, and structures and include species like blackberry, cheatgrass, sandbur, kochia, tumbleweed, etc. General weeds may also occur in agricultural fields, or comprise the dominant vegetation at a site identified for habitat restoration and includes species like cheatgrass, Jim Hill mustard, reed canarygrass, bindweed, thistle, etc.

MANAGEMENT INFORMATION

Herbicide can be an effective tool for control and applicators should refer to the PNW Weed Management Handbook, or other reputable resources, for product recommendations and timing depending on the weed and desired management objectives.

Mechanical weed control may include mowing, burning, or even plowing and disking entire fields.

CURRENT DISTRIBUTION ON THE SITE

All public access areas and roadsides on the wildlife area contain general weeds to varying degrees. Several agricultural fields at the Big Valley and Methow Units are comprised of general weeds.

ACRES AFFECTED BY WEED: ~200

WEED DENSITY: low to high

GOALS

Maintain public access
Restore agricultural fields
Reduce fire danger

OBJECTIVES

Treat high public use areas with residual herbicide to prevent seed production.
Summer fallow fields in second phase of restoration.
Continue treating infestations with a combination of mechanical control and appropriate use of herbicide

ACTIONS PLANNED

- In the spring of 2006, problematic portions of roadsides, parking lots, access sites, and trailheads will be treated with a residual herbicide to eliminate the production and spread of weed seeds and improve appearance and public access for the entire season.
- Agricultural fields in the Rendezvous will be fallowed this spring-fall season in preparation for a restoration planting in the fall.
- Dryland agricultural fields will be disced to reduce weed infestations.
- General weeds along roads used as firebreaks on the wildlife area will be controlled keep fuels to a minimum, especially where our lands lie adjacent to residential areas.

- We will apply for grants to restore weedy, non-productive dryland agricultural fields to native vegetation following proven restoration protocol.
- Look into jail crew handpulling-crews for roadside maintenance.

CONTROL SUMMARY AND TREND

2005- Approximately 140 acres were treated.

Roadside and access management have required a consistent, yearly maintenance effort. Increases in general weed management reflects the restoration work that has occurred in recent years on the Methow and Big Valley Units. There are approximately 400 acres of acres of general weed infested fields that must be eventually controlled over the next 8 years.

APPENDIX 3. FIRE CONTROL

The Department of Natural Resources (DNR) provides fire protection on WDFW lands located in the South Okanogan District under DNR's Forest Fire Protection Assessment (FFPA). All forest fighting and control efforts are coordinated by WDFW, DNR and the US Forest Service on and adjacent to the Methow Wildlife Area.

By policy, WDFW employees are directed not to fight fires. Wildlife Area staff are trained in fire fighting and fire behavior (blue and red card), however, in order to provide support and information regarding critical habitat values to the Incident Commander of the responding fire district.

Wildlife Habitat Concerns: The Methow Wildlife Area contains fire sensitive habitat that is critical to several species of wildlife including mule deer winter range. Therefore, when a fire occurs in or near the wildlife area, WDFW requests that the Incident Commander or other fire fighting personnel on site to notify WDFW personnel immediately. A WDFW Advisor will provide information to the Incident Commander regarding habitat concerns.

Aerial Support: The WDFW recommends that fire-fighting entities suppress fires on the wildlife area as rapidly as possible, while using known and existing fire breaks when possible. WDFW requests the incident commander to seek aerial support if needed to extinguish a fire on its land promptly. If, in the professional judgment of the Incident Commander, a fire on lands adjacent to the Methow Wildlife Area poses an immediate threat to the area, WDFW requests that he/she seeks aerial support as outlined above.

Fire on the Area or threatening the area: Report any fire on or adjacent to all units of the Scotch Creek Wildlife Area by contacting the DNR Dispatch Office in Colville (Northeast district; phone number: 509-684-7474. It is absolutely critical that any fire on the Area is attacked as aggressively as possible during the initial attack. The importance of aerial support cannot be overstated.

METHOW WILDLIFE AREA EMERGENCY TELEPHONE NUMBERS

Department of Fish and Wildlife - contact in order listed

NAME	TELEPHONE	PRIVATE TELEPHONE	CELL
Kimberly Romain-Bondi, Methow Wildlife Area Manager	509-996-2559 509-996-4655	509-997-0346	509-630-3405
Robert Wottlin, WA assistant manager	509-996-2559 509-996-4655	509-997-0291	
Scott Fitkin, District Wildlife Biologist	509-996-4373	509-996-	
Cal Treser, Wildlife Agent, Methow		509-997-1777	509-322-4356
Jim Brown – Sergeant, Omak Office	509-826-7371		
Regional Office - Ephrata	509-754-4624		
Regional Program Manager – Matt Monda	509-754-4624 (16)		
Jeff Heinlen, Field Biologist	509-826-7372	509-486-0970	
State Patrol Dispatch	911		
Steve Dauma, Enforcement Captain, Ephrata	509-754-4624 (18)		509-989-4984

DNR- contact in order listed and request Operations or Staff Coordinator

NAME	TELEPHONE
DNR Dispatch (Colville)	509-684-7474
DNR Omak field office	509-826-7316

Fire Districts – DIAL 911

NAME	TELEPHONE	CELL
Fire District No. 6, Winthrop		

APPENDIX 4. WATER RIGHTS

	Qi	UOM	Qa	Ir Acres	WRIA		TRS	QQ/Q	Src's	1 st Src	Comments
Methow Dam	3.64	CFS			48	OKANOGAN	34.0N 22.0E 30		1	Methow River	
Sinlahekin Unit	300.000	GPM			48	OKANOGAN	35.0N 21.0E 30		1	WELL	
Big Buck Unit	1.00	CFS	200.00	40.00	48	OKANOGAN	33.0N 21.0E 01	SE/NW	1	SCOTT CYN CREEK	
Big Buck Unit	1.00	CFS	200.00	40.00	48	OKANOGAN	33.0N 21.0E 01	SE/NW	1	SCOTT CANYON CREEK	
Big Buck Unit	3.00	GPM	2.50	2.00	48	OKANOGAN	33.0N 21.0E 04	NE/SE	1	UNNAMED SPRING	
Big Buck Unit	2.00	GPM	1.67		48	OKANOGAN	33.0N 21.0E 04	NE/SE	1	UNNAMED SPRING	
Big Buck Unit	5.00	GPM	4.18	2.50	48	OKANOGAN	33.0N 21.0E 04	SE/SE	1	UNNAMED SPRING	
Big Buck Unit	5.00	GPM	4.18	2.50	48	OKANOGAN	33.0N 21.0E 04	SE/SE	1	UNNAMED SPRING	
Big Buck Unit	3.47	GPM	3.00		48	OKANOGAN	34.0N 21.0E 35		1	UNNAMED SPRING	
Big Buck Unit	3.47	GPM	3.00		48	OKANOGAN	34.0N 21.0E 35		1	UNNAMED SPRING	
Big Buck Unit	3.47	GPM	3.00		48	OKANOGAN	34.0N 21.0E 36		1	LAKE	
Big Buck Unit	3.47	GPM	3.00		48	OKANOGAN	34.0N 21.0E 36		1	LAKE	
Big Buck Unit	3.47	GPM	3.00		48	OKANOGAN	34.0N 21.0E 36		1	LAKE	
Big Buck Unit	3.47	GPM	3.00		48	OKANOGAN	34.0N 21.0E 36		1	LAKE	
Big Valley Unit		CFS			48	OKANOGAN	35.0N 20.0E 10		6	METHOW RIVER	Permanent trust
Big Valley Unit	7.40	CFS	2,555.00	350.00	48	OKANOGAN	35.0N 20.0E 10		1	Methow River	Underlyng to CS4-WRC038074@1. Actually a well.
Big Valley Unit	100.00	GPM	20.00		48	OKANOGAN	35.0N 21.0E 30		1	POND	
Golden Doe Unit	0.67	CFS	115.00	35.00	48	OKANOGAN	32.0N 22.0E 03		1	METHOW RIVER	
Golden Doe Unit	0.01	CFS	9.00		48	OKANOGAN	32.0N 22.0E 04	NW/NE	1	RESERVOIR SPRING	

Golden Doe Unit	0.01	CFS	9.00		48	OKANOGAN	32.0N 22.0E 04	NW/NE	1	RESERVOIR SPRING	
Golden Doe Unit	0.00	CFS	3.00		48	OKANOGAN	32.0N 22.0E 04	NW/SW	1	UNNAMED SPRING	
Golden Doe Unit	0.00	CFS	3.00		48	OKANOGAN	32.0N 22.0E 04	NW/SW	1	UNNAMED SPRING	
Golden Doe Unit	0.00	CFS	3.00		48	OKANOGAN	32.0N 22.0E 04	NW/NW	1	UNNAMED SPRING	
Golden Doe Unit	0.00	CFS	3.00		48	OKANOGAN	32.0N 22.0E 04	NW/NW	1	UNNAMED SPRING	
Golden Doe Unit	0.40	CFS	80.00	20.00	48	OKANOGAN	33.0N 22.0E 33	SE	1	ALDER CREEK	
Methow Unit		CFS			48	OKANOGAN	33.0N 22.0E 01		1	UNNAMED STREAM	
Methow Unit	0.002	CFS		5	48	OKANOGAN	33.0N 22.0E 01		1	UNNAMED SPRING	
Methow Unit	0.76	CFS		37.79	48	OKANOGAN	33.0N 22.0E 02	SE/SW	4	BEAVER CREEK	
Methow Unit	0.97	CFS		48.66	48	OKANOGAN	33.0N 22.0E 02	SE/SW	4	BEAVER CREEK	
Methow Unit	0.95	CFS		47.43	48	OKANOGAN	33.0N 22.0E 02	SE/SW	4	BEAVER CREEK	
Methow Unit	0.50	CFS		2.28	48	OKANOGAN	33.0N 23.0E 07	SW/SE	1	FRAZER CREEK	
Methow Unit	0.001	CFS		7	48	OKANOGAN	33.0N 23.0E 07		1	UNNAMED SPRING	
Methow Unit	0.26	CFS		13.01	48	OKANOGAN	33.0N 23.0E 09	NW/SW	1	FRAZER CREEK	
Methow Unit	1.05	CFS		52.70	48	OKANOGAN	33.0N 23.0E 08	NE/SW	2	FRAZER CREEK	
Methow Unit		CFS			48	OKANOGAN	34.0N 22.0E 04		1	COUGAR LAKE	
Methow Unit		GPM			48	OKANOGAN	34.0N 22.0E 05		1	WELL	
Methow Unit	0.02	CFS	1.00		48	OKANOGAN	34.0N 22.0E 08	SW/SE	1	BOWEN CREEK	
Methow Unit	0.06	CFS		3.00	48	OKANOGAN	34.0N 22.0E 08	SE/SW	1	BEAR CREEK	
Methow Unit	0.71	CFS		35.40	48	OKANOGAN	34.0N 22.0E 08	SE/SW	2	BEAR CREEK	
Methow Unit	0.24	CFS		12.00	48	OKANOGAN	34.0N 22.0E 09	NW/SW	2	UNNAMED SPRING	
Methow Unit	5.00	CFS	30.00		48	OKANOGAN	34.0N 22.0E 22		1	UNNAMED SPRING	
Methow Unit	5.00	CFS			48	OKANOGAN	34.0N 22.0E 22		1	UNNAMED SPRING	
Methow Unit	1.00	CFS		40.00	48	OKANOGAN	34.0N 22.0E 23		1	BEAVER CREEK	Temp trust to 10/05
Methow Unit	1.00	CFS		40.00	48	OKANOGAN	34.0N 22.0E 23		1	BEAVER CREEK	
Methow Unit		CFS			48	OKANOGAN	34.0N 22.0E 34		1	UNNAMED SPRING	
Methow Unit	1.05	CFS		52.41	48	OKANOGAN	34.0N 22.0E 35	NW/SE	1	BEAVER CREEK	
Methow Unit	2.00	CFS	270.00	100.00	48	OKANOGAN	35.0N 21.0E 25	NW/NE	1	PEARRYGIN CREEK	
Methow Unit	0.5	CFS			48	OKANOGAN	35.0N 22.0E 18		1	RAMSEY CREEK	
Methow Unit	1.20	CFS		60.00	48	OKANOGAN	35.0N 22.0E 32		2	UNNAMED STREAM	
Methow Unit		CFS			48	OKANOGAN	35.0N 22.0E 32		1	BEAR CREEK	

Methow Unit--may not be department's	1.10	CFS	205.00	51.00	48	OKANOGAN	35.0N 21.0E 25		1	PEARRYGIN CREEK	
Methow Unit--may not be department's				78.00	48	OKANOGAN	35.0N 21.0E 25		1	PEARRYGIN CREEK	
Texas Creek Unit	0.20	CFS		5.00	48	OKANOGAN	31.0N 22.0E 04		3	UNNAMED SPRING	
Texas Creek Unit					48	OKANOGAN	31.0N 22.0E 05		1	WELL	Temp trust to 10/05
Texas Creek Unit	250.00	GPM	64.00	16.00	48	OKANOGAN	31.0N 22.0E 05		1	WELL	Temp trust to 10/06
Texas Creek Unit		GPM			48	OKANOGAN	31.0N 22.0E 05		2	Well 2	In reference to G3-+20464CWRIS
Texas Creek Unit		GPM			48	OKANOGAN	31.0N 22.0E 05 SW/NW		1	Well 3	In reference to G4-*00467SWRIS
Texas Creek Unit		CFS			48	OKANOGAN	31.0N 22.0E 05		1	METHOW RIVER	In reference to S4-*13459CWRIS
Texas Creek Unit	656.00	GPM	441.00	100.00	48	OKANOGAN	31.0N 22.0E 05		1	WELL	Temp trust to 10/05
Texas Creek Unit					48	OKANOGAN	31.0N 22.0E 05		1	WELL	Temp trust to 10/05
Texas Creek Unit	0.77	CFS	176.00	44.00	48	OKANOGAN	31.0N 22.0E 05		1	METHOW RIVER	Temp trust to 10/05
Texas Creek Unit	0.27	CFS		10.00	48	OKANOGAN	32.0N 22.0E 28		1	UNNAMED SPRING	
Texas Creek Unit	0.02	CFS		5.00	48	OKANOGAN	32.0N 22.0E 28		5	UNAMED SPRING	
Texas Creek Unit		CFS			48	OKANOGAN	32.0N 22.0E 32		1	Methow River	
Texas Creek Unit	0.07	CFS		3.00	48	OKANOGAN	32.0N 22.0E 32		1	Methow River	Temp trust to 10/05

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